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A CASE OF FRACTURE OF THE TEMPORAL BONE, WITH REMARKS ON TREPHINING FOR FRACTURE OF THE BASE OF THE SKULL.

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The object of reporting this case is to call attention to the advantage of drainage as an aid to the process of repair after fracture of the base. Until quite recently this grave lesion has been regarded as beyond the pale of surgical interference. The latest literature shows, however, that hospital surgeons are endeavoring to apply the principles of antiseptic surgery to this almost inaccessible region, and the recent advances in brain surgery encourage the hope that more attention will be paid to the lesions of the different fossæ of the skull and their contents, and that valuable suggestions may from time to time be forthcoming as to the management of the complications to which they give rise.

T. K. L., seventeen years of age, a tall and slender man, was riding in the saddle about dusk of the afternoon of October 20, 1889, and had separated from his companions, having ridden rapidly ahead of them when the accident occurred. According to the statement of a passer-by, he was observed turning a corner in the road at a moderate pace, when suddenly horse and rider were seen struggling in the dust. The horse soon regained his feet and ran away. It is supposed that as the corner was turned the horse shied suddenly, throwing the rider and falling upon him.

When the patient was approached he was found to be comatose and bleeding profusely from the nose and left ear; a narrow strip of brain substance was found upon the sleeve of his coat. The accident occurred about 6 P.M. On my arrival (about 10 P.M. the same evening) I found

the patient comatose with heavy breathing. There was, apparently, no paralysis of any kind; the pupils were normal and reacted to light; the pulse was of good strength and about 100 beats to the minute; hemorrhage from the nose had ceased, but the patient had vomited blood an hour or so before. Blood was still oozing from the left ear, and on close inspection two fragments of brain substance, each about the size of a pea, were found at the external auditory meatus. There was a contusion on the forehead just above the glabella, forming quite a prominent tumor. Careful examination of the scalp failed to reveal any depression of the bone. There was a boggy swelling of the integuments of the left temporal bone above and behind the ear, and a faint depression about two inches above the external meatus, which, however, was thought not to be due to displacement of bone. Pressure on these parts produced a fresh flow of blood from the ear, the flow ceasing between the intervals of examination. No external wound was visible anywhere. The presence of brain in the discharge from the ear, the contusion of the neighboring scalp, and the profound coma pointed to serious injury at the base of the brain and in the left temporal bone.

The evidence of grave injury at this spot seemed so pronounced, and the prognosis of the case seemed so unfavorable, that although no depressed fragments of bone were felt, it seemed justifiable to depart from the ordinary rule of non-interference in fracture of the base and to make an exploratory incision for the purpose of arresting hemorrhage, affording drainage, or removing clots and fragments of bone.

The operation was performed shortly after midnight—that is, about six hours after the accident—in the presence of Drs. Hall Curtis, S. J. Mixter, and John Homans, 2d., the latter having charge of the case subsequently. The scalp on this side of the head having been shaved, a curved incision was made, starting from the auriculo-bregmatic line at a point about two and one-half inches above the external auditory meatus and returning to the level of the meatus. The flap thus made, when reflected forward, exposed the posterior half of the squamous portion of the temporal bone. A nearly vertical fracture was found at about the juncture of the middle and posterior thirds of that bone: at its upper end the fracture terminated in several radiating cracks, about one-half inch in length each, which crossed the squamous suture and involved the adjacent parietal bone; it ran downward and slightly forward to the external auditory meatus, where it could be seen running along the wall of the auditory canal. (Fig. 1.) There was no depression of the bone, but the edges of the cleft were slightly sprung at the lower portion. Considerable dark-colored fluid blood with small clots welled up from beneath on slight pressure on the bone. A one-inch trephine was placed directly over the line of fracture a short distance above the meatus, and a button of bone removed, the lower edge of which was nearly on a level with the floor of the middle fossa. The dura was found torn at this point, and the finger being introduced, could follow the fracture along the petrous portion of the temporal bone, and on being turned upward found its way to the depth of the second kunckle into a lacerated wound of the middle lobe. There were a few small clots only removed from the wound, but a considerable quantity of fluid blood escaped which had evidently been

confined beneath the bone; an arterial branch had been torn at this point, as shown by the groove in the button removed, and bled freely, but was easily controlled by pressure. The decalcified bone drainage-tubes which I had brought with me were found to be too much softened for use, and a strip of bichloride gauze was accordingly pushed gently

FIG. 1.

Line of the fracture through the squamous portion of the temporal bone. The dotted line shows the point at which the trephine was placed.

along the floor of the skull, and a number of strands of catgut tied together were pushed up into the lacerated brain tissue; a small strip of gauze was placed in the auditory canal. A dressing of bichloride gauze and absorbent cotton, fortified by a folded towel wrung out of the diluted solution, was applied and held firmly in place by a figure-of-eight bandage. Antiseptic precautions were observed throughout the operation.

Immediately after the operation the patient was cold and pale and the pulse weak; the coma remained as before; urine was passed involuntarily. During the night the dressing being stained, was reinforced. The temperature the next morning was 100.8° F., but fell to normal on the morning of the second day; he then appeared stronger. The dressing, on being changed, was found saturated with bloody serum. As it was quite a voluminous dressing, the amount of cerebro-spinal fluid and bloody discharge which it had absorbed must have been considerable.

The drains were not disturbed and an iodoform gauze and absorbent cotton dressing was applied. A strip of iodoform gauze was placed in the auditory canal, which at each dressing was carefully syringed out with sublimate solution, 1:5000. The temperature rose on the evening of the second day to 100.9°, the highest point reached, and fell steadily from this point to normal on the sixth day. On the fourth day the dressing was changed again: the catgut drain came away and the gauze was removed, and was replaced by a small strip of iodoform gauze inserted just within the margin of the cranial cavity; all the scalp stitches except one were removed. This dressing was allowed to remain three days, and on the 27th, just a week after the accident, all stitches and the gauze drains had been removed. During this period coma had been complete, but on this day, for the first time, the patient opened his eyes and recognized his mother. The expected subconjunctival ecchymosis did not occur, it being evident that the effusion had had ample opportunity to escape through the drain established.

Careful attention was paid to the condition of the mucous membrane surrounding the opening of the Eustachian canal. A small amount of iodoform was blown into the left nostril with an "insufflator" once daily, and the nostril and pharynx were sprayed once or twice a day with a four per cent. solution of boracic acid. The hygiene of the mouth was also carefully attended to. It was hoped that in this way septic infection of clots in the middle ear from the side of the pharynx might be prevented. On the tenth day the gauze drain, which had been pushed less deeply into the wound, was removed altogether, and the granulating wound healed completely a few days later. A dressing of iodoform gauze was continued over the auditory meatus, which was syringed out with a sublimate wash every few days.

The mental condition of the patient during the the second week underwent little change. Beyond moaning and crying in a childish way, and staring with a puzzled expression when disturbed, there was little to indicate a knowledge of his surroundings. In the third week there was a decided improvement, the patient being able to recognize and name individuals about him and to remember me after an interval of several days. With returning consciousness a marked degree of sensory aphasia showed itself.

The temperature during this period was slightly subnormal and the pulse rose rapidly to 115 on any excitement. Sleep and appetite were, however, excellent. About this time it was noticed that the tongue, when protruded, curved slightly to the left, and the muscles of the right side of the face were not quite so powerfully contracted as those of the left. Beyond this, however, no sign of paralysis was oberved anywhere. There was a slow but steady improvement in all symptoms from this time on. A statement written out by his nurse on December 6th, about six weeks after the accident, gives a good idea of his mental condition at that time:

"In language he improves and generally can easily be understood, though there are many words whose meaning he has forgotten. 'Hilarity' had to be repeated or explained several times. . . . He will sometimes talk in French or German, but cannot explain or translate it. In trying to write the shortest or simplest words he cannot remember what letters to use. . . . He often says, or asks for, things opposite

to what he means; for instance, he will say, 'myself and the other girls.' In some ways his senses are keen, while in others he is very child-like."

It should be mentioned in this connection that the patient had been a brilliant scholar.

On December 8th the ear was examined by Dr. Clarence J. Blake, who made the following report: "The walls of the canal are but slightly reddened; there is very little discharge from the ear, and the hearing is gratifyingly good, as the tuning-fork which he heard sixty-five seconds in the sound ear is heard between thirty-five and forty seconds in the left ear. By bone conduction the fork is heard better in the left ear. In this ear also the hearing for high tones remains as good as could be expected under the existing conditions, including rupture of the membrana tympani. The condition of the ear indicates fracture of the superior wall of the external canal longitudinally and rupture of the membrana tympani, but no injury to the labyrinth."

There is little to be said about the further progress of the case, except that the mental improvement was rapid during the month of December, and by January 1st the aphasia had almost entirely disappeared. Under date of March 2d Dr. John Homans, 2d., writes me: "The tongue is still protruded slightly to the left; there are some hesitancy and stammering in the speech and an incapability of continuous mental exertion—that is, he cannot read aloud for more than half an hour without mispronouncing badly and having slight pain in the head, but in all these defects there is a steady, though slow, improvement."

On February 4th Dr. Blake writes: "To-day young L. has no discharge from the ear, the granulations have disappeared, the membrana tympani is intact, but somewhat opaque, from the thickening of the inner coat, the Eustachian tube is free, and the hearing after catheterization is for a Politzer acoumeter $\frac{6.5}{180}$."

The question of diagnosis is of importance in this case, as it is, of course, desirable to determine definitely whether we have a "fracture of the base" to deal with. So far as the appearances observed within the ear and the complete restoration of the hearing serve as evidence, it would appear that there had been a widely spreading fracture of the superior wall of the bony external auditory canal, stopping at the inner end of the canal. But such an assumption is highly improbable when we consider the anatomical peculiarities of the temporal bone and the structures which lie in the direct line of the fracture. The petrous portion of the bone is, it is true, largely composed of dense bony tissues, but the bony covering of the middle ear, which lies in the anterior portion of the petrous portion and near its junction with the squamous portion, is extremely thin. There are other structures which tend to make the bone particularly weak at this point.

Passing a probe through the Eustachian tube and the auditory canal of a dry specimen, and looking at the under surface of such a bone, we see that the probe marks a line of division between the squamous portion on the one side and the mastoid and petrous portions on the other. Along this line lie the canals for the Eustachian tube and tensor tympani muscle,

the external auditory canal, and the Glaserian fissure. The carotid canal, although not on this exact line, is quite near it, and weakens this portion of the petrous bone. A fracture descending from the squamous portion and passing along the wall of the external auditory canal, parallel with its long axis, would, if continued onward in the same line, pass through the structures just mentioned; and, moreover, piercing the membrane of Schrapnell would pass in front of the apparatus for hearing. It is true that rupture of this membrane implies the opening of the tympanic cavity, but the membrana tympani is placed at an extremely oblique angle with the long axis of the canal, which runs forward and inward, and a longitudinal fracture through the roof of the canal, if continued in the same direction, would rupture the membrane of Schrapnell, traverse the anterior portion of the tympanic cavity, and, avoiding the delicate structures of the middle ear, terminate somewhere in the angle between the petrous and the squamous portions of the bone—that is, at the point where the temporal bone articulates with the posterior angle of the great wing of the sphenoid bone. (Fig. 2.)

Fig. 2.

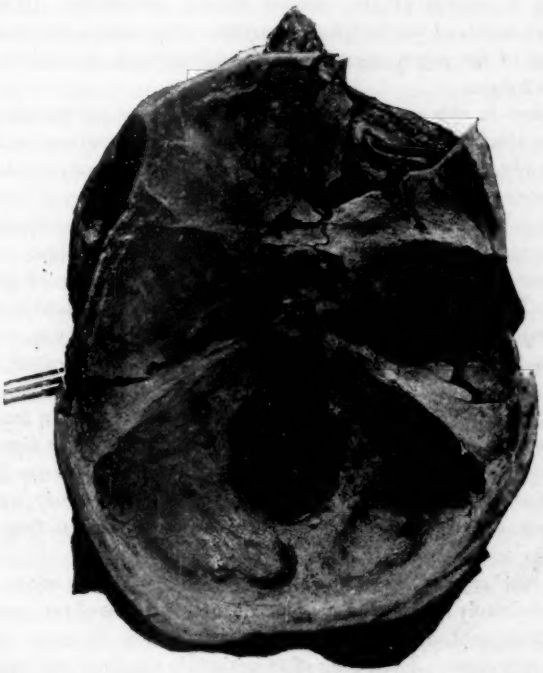
The probable route of the fracture terminating in the carotid canal at the margin of the foramen lacerum medium. The dotted circle shows the seat of the trephine hole.

Experiments on the cadaver to show what kind of violence probably caused the lesion of our patient demonstrated that such fractures could be produced by blows with a blunt instrument applied directly above the external auditory meatus.

The head of a fresh cadaver was tested in this way in the autopsy-room and a number of dissecting-room subjects were also used for this

purpose. In all cases the fracture ran down the anterior and external portions of the petrous bone to terminate either in the external margin of the foramen lacerum medium or the junction of the posterior angle of the great wing of the sphenoid with the temporal bone—that is, near the foramen spinosum through which the meningeal artery passes. In some cases the broken edges were closely in contact; occasionally the fissure was broad so that one could look down into the tympanic cavity where the bones of the ear could be seen still maintaining their normal positions. (Fig. 3.)

FIG. 3.



Fractures through the petrous bones into the foramen lacerum medium on each side, produced experimentally by blow of a mallet before opening the head. A glass rod is placed in the left external auditory canal.

It seems highly probable, therefore, that this is the type of fracture ordinarily produced by blows received over the external ear. But in the present case the bone was not only broken, but the brain was also severely lacerated and the dura ruptured. My explanation of the injury is as follows: In falling from his horse the patient struck upon the forehead producing the contusion already noted. This accounted, probably,

largely for the hemorrhage from the nose and vomiting of blood. The horse in falling struck him a severe blow on the side of the head, producing the fracture of the temporal bone, and at the same time the weight of the animal pressing heavily upon the cranium, forced apart the edges of the fracture and forced out the cranial contents, rupturing the dura. As the bones sprang back into place the protruded brain was nipped and expelled through the ear, thus accounting for the narrow strip of brain found on the patient's coat-sleeve.

The laceration of the brain extended deeply into the middle lobe, reaching as far as the first temporo-sphenoidal convolution and possibly involving a portion of the inferior frontal convolution. The lesion must have involved the peripheral portions of the centre for speech, and the effects of the injury must have been felt as far as the centres for the face and tongue.

We have in this case an example of fracture of the temporal bone, involving the base and communicating with the external and middle ear, and possibly the Eustachian canal, but not opening directly into the vault of the pharynx. As a complication, we have laceration of the middle lobe and rupture of the posterior branch of the middle meningeal artery.

The symptoms of fracture of the base were characteristic, consisting of profound coma, bleeding from the ear, and the escape of brain-substance. The presence of cerebro-spinal fluid was not noticed at the time of the injury, owing to the free hemorrhage, and later was, naturally, not seen flowing from the ear, owing to the establishment of suitable drainage.

The escape of brain-tissue is not a common occurrence in fractures of the base, but when observed is regarded as an unfailing sign of that lesion. Von Bergmann[1] says: The escape of brain-substance from the fracture of the base is an undoubted symptom of this injury, and at the same time of laceration of the membranes; it may escape from the external ear or the nose.

Nancrede[2] says: The escape of brain-substance by the ear or nose, of course, definitely settles the fact of basal fracture, but is of rare occurrence.

The treatment of fractures of the base, until recently, has been largely expectant. Even long after antiseptic treatment of wounds had been established, surgeons do not appear to have realized that in this form of fracture they often had a compound fracture to deal with. Recent literature, however, has taken cognizance of the claims of this region to the benefits of antisepsis. Keen[3] advises disinfection of the ear, filling it with boracic acid, and covering the scalp with sublimate

[1] Deutsche Chirurgie, Lieferung, 30.
[2] International Encyclopædia of Surgery, vol. v.
[3] Handbook of Medical Science, vol. viii. p. 226.

gauze. He recommends opening the roof of the orbit or nostril in penetrating wounds of those regions, to provide for free drainage. He also advises tamponing the nostrils with sublimate gauze to prevent passage of infective air through these passages.

Dennis[1] lays down rules for the treatment of this fracture. He thinks the entire scalp should be shaved and disinfected. He also irrigates the external auditory canal and the nasal passages. "Both of these should be rendered thoroughly aseptic, after which the ears should be packed with iodoform or bichloride gauze, and some absorbent cotton plugs placed in the nose."

In the case reported here every effort was made to prevent infection through the Eustachian tube. The epistaxis and hematemesis in this case may have been due, in part, to the flow of blood from this canal. It was, in any event, important to keep the inner opening to the middle ear in as aseptic a condition as possible.

This can hardly be accomplished by gauze or cotton plugs in the nose unless they are brought in direct contact with the mouth of the Eustachian tube.

Rosenbach has shown that the pharynx is a not infrequent seat of the pyogenic cocci, and the antisepsis of this region must, consequently, also be carefully attended to.

Frequent douching of the naso-pharynx and mouth with antiseptic sprays is perhaps as efficient and safe a method as any. At the Boston City Hospital diphtheria patients are sprayed hourly in this way with a 1 : 1000 solution of sublimate given with an insufflator, and often without waking the patient. A little iodoform powder dusted once a day on to the membrane near the Eustachian opening may aid in preserving the region in an antiseptic condition. Should a more extensive fracture, such as one crossing the vault of the pharynx, exist, it might be advisable to plug the pharynx and posterior nares with antiseptic gauze. Such a dressing would be no annoyance to a comatose patient, and it is difficult to see how a fracture of this region could be dressed antiseptically in any other way.

The use of the trephine has been recommended for depressed fractures of the base, but has not been frequently employed, and then only in the occipital region. Hutchison[2] has applied the trephine successfully near the foramen magnum for a depressed fracture of that region in a boy fourteen years of age; puncture of the membrane was subsequently resorted to for a serous effusion, and recovery took place.

Keen recommends an opening for drainage in the roof of the orbit in punctured wounds at that point. Allis (*Annals of Surgery*, July, 1889)

[1] The Medical Record, November 23, 1889.

[2] Medico-Chirurgical Transactions, vol. ii. p. 105.

drilled through the cribriform plate for drainage of a compound depressed fracture of the frontal bone situated an inch above the right eye—a drainage tube three-eighths of an inch in diameter was passed through the openings. The patient recovered.

Trephining for drainage in fractures of the base is a device which I do not find mentioned in a moderate search through the literature of this subject, and its successful application to Dr. Homans's patient seems to me of sufficient importance alone to justify placing the case on record.

Applied just above the external auditory meatus the instrument makes an opening which drains most effectually the middle fossa. This operation would, therefore, be applicable not only to fractures of the temporal bone but fractures through the sphenoid, and even those involving the anterior fossa. For this latter region, however, it would probably be desirable to place the trephine near the pterion, as injuries to the middle meningeal artery might thus also be attended to.

In fractures of the occipital bone the opening should be made below the insertion of the tentorium in order to drain the posterior fossa, and care should be taken to avoid the lateral and occipital sinuses. The trephine should, therefore, be placed below the superior curved line, and not too near the crest of the occiput.

Recently I had an opportunity to see two autopsies of cases of fracture of the base. In one case there was a partially detached fragment of the occiput half-way between the foramen magnum and superior curved line. The fragment could not be removed, owing to severe hemorrhage from the lateral sinus, and the surgeon had left the parts so as to favor drainage. On opening the skull but a small amount of extravasated blood was found in the pia mater of the cerebellum and medulla. In a second case where the sinuses had also been ruptured and no opening for drainage had been made, the entire surface of the brain was covered with extravasated blood.

In a fracture clearly involving the vault of the pharynx, even though it were not possible to say that the temporal bone had been injured, the trephine might be placed a little anterior to the auriculo-bregmatic line and a gauze drain inserted along the floor of the skull in the route of the fissured bone. A case can even be imagined where it would be proper to place the trephine upon the squamous portion of each temporal bone in order that the entire region of the sphenoid bone might thus be controlled by the drainage gauze.

The materials used as drains in surgery of the brain should, it seems to me, differ essentially from those used ordinarily for this purpose elsewhere. The sharp edges of bone or rubber drains are sources of irritation and may even destroy brain substance by pressure. Catgut may be absorbed too soon, but otherwise works well. Horse-hair may be suited for the scalp, but could not easily be introduced into a lacerated

wound of the brain-tissue without danger of irritation from the sharp points.

The antiseptic gauze used in my case seemed to meet all requirements. It can be easily slipped along the inner surface of the dura and constitutes not only a drain, but also an antiseptic dressing, which protects the cranial contents from invasion from the naso-pharyngeal cavities or the ear. It can drain, not only the wound, but may absorb from the subdural space fluid which accumulates on either side of the dressing, and by capillary attraction aspirate the exudation from different directions.

No better illustration of the advantages of drainage for fractures of the base could be given than that afforded by the celebrated tamping iron case. (Fig. 4.) Dr. Harlow[1] thus describes the opening made through the floor of the skull:

FIG. 4.

Photograph of the base of the skull of the tamping iron case, showing the hole made by the iron in its passage through the frontal and sphenoid bones.

"The missile . . . entered the base of the skull at a point, the centre of which is one and one-fourth inches to the left of the median line, in the

[1] Passage of an iron bar through the head. Read before the Massachusetts Medical Society, June 31, 1868. John M. Harlow, M.D.

junction of the lesser wing of the sphenoid with the orbital process of the frontal bone, comminuting and removing the entire lesser wing with one-half of the greater wing of the sphenoid bone; also fracturing and carrying away a large portion of the orbital process of the frontal bone, leaving an opening in the base of the cranium, after the natural efforts at repair by the deposit of new bone, of one inch in its lateral by two inches in its antero-posterior diameter."

In his remarks upon the case he says:

"The bolt did little injury until it reached the floor of the cranium, when, at the same time that it did irreparable mischief, it opened up its way of escape, as without this opening in the base of the skull, for drainage, recovery would have been impossible."

ABSCESS OF THE LARYNX.[1]

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Under the name of abscess of the larynx is described "a circumscribed collection of pus, due to inflammation of the soft tissues of the larynx, interfering with the vocal functions of that organ, and sometimes with the proper action of the epiglottis." "Under this head, abscess of the larynx dependent on perichondritis is not considered" (Mackenzie[2]).

By some authors (Rilliet et Barthez[3]) this condition is described under the name of submucous laryngitis; by others (Eustace Smith[4]), under the title of "suppuration about the larynx;" or, as by Urunuella,[5] "phlegmonous laryngitis."

Some of the older writers, as Roland and Morgagni, have mentioned this disease, but it is difficult to determine in their cases whether it was dependent on perichondritis or due simply to an idiopathic inflammation of the soft parts of the larynx. Cayol, Latham, Percival, Bayle and Albus, as well as a number of other writers, have also devoted more or less attention to the subject. Those who desire to look up the earlier literature will find a very complete bibliography in Gottstein's[6] article.

In but few of the standard books on general medicine or diseases of children is any mention made of the condition—one of much importance, if we take into consideration the disastrous results occasionally following.

[1] Read before the New York Hospital Graduates' Club, November 21, 1889.

[2] Mackenzie (Morell): Diseases of the Larynx.

[3] Rilliet et Barthez: Maladies des Enfants, Paris, 1861, vol. i. p. 385.

[4] Eustace Smith: Disease in Children.

[5] Urunuella: Memorias de la Sociedad Espanola de laryngologia, otologia, y rinologia, tome i., Barcelona; also, Revue de laryngol., etc., 1887, vii. 79.

[6] Gottstein: Berl. klin. Wochensch., No. 44, 1866.

This lack of notice is probably due to the extreme rarity of cases. Even the best books on diseases of the throat pay very little attention to idiopathic abscess, or abscess not dependent on a perichondritis or chondritis. The latter is, of course, comparatively frequent, inasmuch as phthisis, syphilis, cancer, and typhoid fever, which are generally antecedent to perichondritis, are so common.

Those who are in general practice will, I think, be glad to have their attention called to the subject, on account of the similarity to cases of croup and retropharyngeal abscess. To those who are interested in laryngology, the rarity of the case will be sufficient explanation for this paper.

We have been able to collect in literature the records of twenty-six cases, in addition to the thirteen cases mentioned by Mackenzie. Of these, the youngest was nine weeks old, the oldest seventy-one years of age, except Morgagni's case, who was eighty years old; this, however, we have not included.

Abscess in this situation is more frequent in adults than in children, the decade between 20 and 30 showing the largest number of cases—9 out of 26, or about 35 per cent. The first decade is next most frequent, there being 8 cases, or not quite 31 per cent., and of these 6 were in children under five years of age. Between 30 and 40, there are but 4 cases in our records, or 15 per cent. One case aged 17, one 40 and one 71, with two cases in which the age was not mentioned, make up the total number.

Males seem to be much more liable to this disease than females, as 16 of the cases were men, while but 9 were of the opposite sex. In one case the sex was not given.

In regard to etiology, in considerably more than half the number the reporters state there was "no known cause." In children, however, the infectious diseases seem to bear a well-marked causal relation to laryngeal suppuration. In adults, exposure to cold and wet is mentioned as the cause in 3 cases; in 2 it seemed to be due to drinking cold water—in one of these cases it occurred immediately after prolonged use of the voice in scolding; in 2 other cases chronic laryngitis was the only cause which could be found, the abscess appearing to be the result of an acute exacerbation.

In by far the larger number of cases the abscess is small and has well-marked limitations. Occasionally, though rarely, the suppuration may involve so much of the connective tissue as to make the abscess cavity extend over the greater part of the larynx (Chauffard[1]); or, as in a case reported by Rilliet et Barthez (*loc. cit.*), death may occur before the abscess has been completely formed.

[1] Chauffard: Bull. Soc. Anat. de Paris, 1881, lvi. 430-433; also, Prog. Méd., Paris, 1882, x. 105.

In Mackenzie's cases the base of the epiglottis was the seat of the lesion in 6 cases; in 4, one of the ventricular bands; and in 3 the aryepiglottic folds were invaded. In the cases here collected the sites were somewhat more diverse. In several instances more than one portion of the larynx was involved. Base of epiglottis, 6; arytenoid eminence, 2; aryepiglottic folds, 3; ventricular band, 1; vocal cords, 3; subglottic portion of the larynx, 6; internal surface of thyroid cartilages, 2; pyriform sinus, 2; the perithyroid connective tissue was also involved in 3 cases. Œdema, more or less sharply limited to the side of the larynx affected, is a very common accompaniment.

The following case came to our service at the Demilt Dispensary during the first of the present month:

Male, aged twenty-seven. No previous family or personal history, and absolute denial of all specific symptoms; no injury, and patient can think of no cause.

For several days past he has felt something in the throat which caused a constant desire to swallow, the act of deglutition being accompanied by a feeling of discomfort, but by little real pain. There has been no dyspnœa, no dysphonia or aphonia, and no cough. He has had slight general malaise and febrile symptoms. Tongue coated, bowels constipated; general condition excellent. Examination of fauces and pharynx shows nothing abnormal. By the mirror is seen at the base of the epiglottis on the left side, between the median and left lateral glosso-epiglottic folds, a rounded, slightly lobulated swelling the size of half a large cherry, covered with reddened mucous membrane. There is a small yellow spot at its most prominent portion. To the touch, the swelling is soft, but without distinct fluctuation; it is not very painful on pressure. The left half of the epiglottis and the left aryepiglottic fold are swollen and œdematous. Cords normal in appearance and movement.

The patient was given a soothing inhalation and told to return in two days. As he did not return, an effort was made to follow his history. At the address given we could not find him; and, so far, have not been able to learn his subsequent history. The records of the Board of Health show that he has not died, so the conclusion is warranted that the abscess ruptured spontaneously and cure resulted. Further effort will be made to trace him.

It is well to divide the description of the disease into two classes: first, as it occurs in children; second, as it is seen in adults.

In children it is often preceded by one of the infectious diseases, the patient thus being in a more or less depressed condition. Occasionally the invasion has occurred while the child was in perfect health (Parry[1]). Measles, scarlatina, smallpox, and erysipelas have been noted as the cause in four of the cases; in another there was well-marked swelling of the cervical and submaxillary glands, but no history of infection. This cervical adenitis is a frequent antecedent to abscess.

[1] Parry: Phil. Med. Times, 1872–3, iii. 580–582.

The child may be first noticed to have some difficulty in swallowing, deglutition of solids being more troublesome than swallowing of liquids; if an infant, it will be unable to nurse, or on attempting to swallow there will be a spasmodic closure of the glottis with return of fluid through the nose and mouth; or the child will cry when nursing is attempted, absolutely refusing to take the breast. Accompanying, or sometimes preceding this, is difficulty of breathing, constant and increasing gradually in severity. This state of constant dyspnœa is frequently interrupted by alarming attacks of spasmodic dyspnœa, brought on by exertion, attempts at deglutition, or any irritation, or sometimes without any apparent cause. The face becomes dusky, eyes prominent, lips much cyanosed, respirations rapid, 30 to 50 per minute, and accompanied by recession of the soft parts of the thorax and epigastrium during inspiration; in fact, all the signs of laryngeal obstruction are present. Each inspiratory effort causes well-marked stridor, while expiration is comparatively easy and noiseless. Orthopnœa is frequently present, the child sitting up in bed and crying if disturbed; or, if any attempt is made to place him in a recumbent position, starting up in an access of intense dyspnœa. There may be retraction of the head and rigidity of the muscles of the back of the neck. Cough of a hoarse, but not brassy, character was present in over half the cases tabulated. In one case it was spasmodic. There is very apt to be aphonia, more or less complete; generally the voice is simply weak. Hoarseness is occasionally present.

On examination, there is no faucial or pulmonary lesion to account for the symptoms; and as the laryngeal mirror cannot be used, the finger must be introduced, when the abscess, if supra-glottic, may be felt. The examination will probably cause a severe attack of dyspnœa. In many cases in children there is a swelling visible, or apparent to the touch, at one side of the larynx (Stephenson,[1] Parry[2]) near the anterior border of the sterno-mastoid, or in front of the larynx (Chauffard[3]). This may cause displacement of the larynx. If present, it is of much aid in diagnosis. The cartilages, in rare instances, are eroded and roughened.

The disease, as a rule, runs a rapid course, from four to ten days being the usual time required for the abscess to form.

The abscess may rupture spontaneously, though this is very unusual in a child, or it may be ruptured accidentally, as recorded by Möller,[4] in whose case on the introduction of a laryngeal catheter, a large amount of pus was expectorated with relief to all symptoms. By far the most

[1] Stephenson: Edin. Med. Journ., 1873, xix. 312, 318.

[2] Parry: Phila. Med. Times, 1872–73, iii. 580–82.

[3] Chauffard: Bull. Soc. Anat. de Paris, 1881, lvi. 430–33; also Prog. Méd., Paris, 1882, x. 105.

[4] Möller: Königsberger med. Jahrb., ii. 270.

frequent termination, however, is the death of the child, four of the eight having died with the abscess unopened. Of the three children in whom the knife was used, two recovered; the one who died, having been the victim of smallpox, did not possess enough vitality to overcome the depression consequent on the prolonged suppuration.

The prognosis, under the best of circumstances, is not good, five of the eight children having died. In one case the severity of the disease was such that the child died before the abscess had formed, there being an extensive submucous infiltration of pus.

The treatment recommended is the inhalation of soothing vapors and the external application of fomentations and poultices. On the first appearance of a tumor, an incision should be made if the dyspnœa be extreme. The operation by the mouth is, in young children, a very difficult or entirely impossible one. Bearing in mind the frequent occurrence of dangerous spasmodic dyspnœa, the possible necessity of tracheotomy should never be lost sight of; and everything should be in readiness for its performance at a moment's notice. Indeed, it is an open question, in view of the ever-present danger of fatal asphyxia, whether a preliminary tracheotomy should not be done, especially in those cases where no external tumor appears.

During convalescence tonics and alteratives must be administered, according to the necessities of each particular case.

Cases of laryngeal abscess are to be differentiated from croup by the less rapid invasion; by the presence of dysphagia or odynphagia; the comparative ease of expiration; the less frequent as well as the less brassy cough, and the increase of dyspnœa on assuming the recumbent position. Œdema of the larynx is exceedingly rare under five years of age: the etiology is different, and examination by the finger shows the general tumefaction.

The symptoms of this affection and many cases of retro-pharyngeal abscess are so nearly alike that the diagnosis must be made by examination of the throat. In the first, the fauces and pharynx are normal; in the latter, the characteristic swelling can be felt if it cannot be seen. If a laryngeal abscess, the presence of a tumor externally would be a great help, though it must not be forgotten that the sides of the neck are sometimes much swollen in retro-pharyngeal abscess.

In adults the disease may develop with scarcely any symptoms, as in the patient of Berger,[1] who, after two days of slight dyspnœa, suddenly developed intense dyspnœa and died the same evening; or in that of Döring,[2] in which the patient, a soldier, though complaining of slight

[1] Berger: Med. Ztg. Berl., 1855, xxiv. 105; also, Preussische Vereinszeitung, 1855, No. 22.

[2] Döring: Henle und Pfeufer's Zeitschrift für rat. Med., III. Reihe, Bd. ii. 257.

pain in the throat, went to parade about noon, and at five o'clock the same afternoon was dead. In this case the abscess was situated in the same position as the one here reported, except that it was on the right side.

In both of these cases there must have been a longer duration than was apparent by the symptoms.

In other cases the symptoms may be similar to those in children; dyspnœa is the most constant, and, at the same time, the most distressing symptom. As in children, the patient is subject to attacks of intense dyspnœa. Dysphagia is present in about half the cases, being more marked, naturally, the more exposed the site of inflammation is to irritation by the food. Odynphagia is not so frequent a symptom. Currie[1] mentions orthopnœa as present in his case; but this is the only adult in whom it is mentioned, thus differing greatly from children, in whom it is very frequent. Stridulous breathing and cyanosis are occasionally seen; but, like hoarseness and aphonia, are not present in every case. Pain is a much more prominent symptom in adults; and tenderness on pressure over the larynx externally is present in a large proportion of cases, whereas the presence of a tumor externally is a rare occurrence. In a few cases there is the feeling of a foreign body in the throat, causing, as in our case, a constant desire to swallow.

There may or may not be a febrile movement; if present, it is not of very great intensity.

The symptoms generally increase in severity for several days, when the patient may die; or the abscess may rupture spontaneously, or be opened by the attendant—in either case with instantaneous relief to the sufferings, and also to the danger, of the patient. The abscess may rupture during a violent attack of coughing, as in the case recorded by von Kraicz.[2]

In some cases, after slight indefinite symptoms lasting several weeks or months, a patient comes under observation and is found to have an abscess in some part of the larynx (Thin,[3] De la Sota,[4] Marcet and Hillman,[5] Ganghofner[6]). These may be said to belong to the class of chronic abscesses of the larynx.

Occasionally the abscess cavity refills after the first opening, as recorded in the cases of Marcet and Hillman and Ganghofner, making necessary a second, or even a third incision.

[1] Currie: Trans. Med. Soc. of New Jersey, 1876, 166–168.
[2] Von Kraicz: Wiener med. Wochenschr., 1882, No. 22, 656.
[3] Thin: Edinb. Med. Journ., 1860, vi. 537.
[4] De la Sota: Archives of Medicine, 1884, xi. 168–174.
[5] Marcet and Hillman: Lancet, 1868, 757.
[6] Ganghofner: Prag. med. Wochenschr., 1883, viii. 477–490.

Œdema of the larynx is sometimes the immediate cause of death, as recorded by Stromeyer[1] and others.

Out of 25 cases in which the result is known, the abscess was not opened in 10 cases; of these, all but one died, this being 82 per cent. of the entire number of deaths, which was 11. In most of these cases the diagnosis was made post-mortem. Five ruptured spontaneously; of these only one died (of broncho-pneumonia after tracheotomy). Ten abscesses were opened, and in this class only one died—the infant already referred to, who had had variola.

The treatment to be pursued is plainly indicated by the above, namely, a careful external and internal examination of the larynx of every case presenting symptoms similar to those detailed, and an immediate opening of any swelling giving the appearances described in the early part of this article.

Soothing or stimulating applications by means of the laryngeal brush may be used if the case does not progress satisfactorily after the abscess has been opened.

Cysts can scarcely be mistaken, on account of their lack of redness, their regularity and the well-marked vascular ramification on their surface.

New growths may, at first sight, cause much difficulty in diagnosis; but the history, seat, cause, and generally the consistence, will enable one to differentiate them.

Abscesses due to perichondritis or chondritis, while presenting similar appearances occasionally, can be excluded by careful attention to the patient's general condition, history of present illness, and examination by the probe, when necrosed or roughened cartilage may be felt.

For help in looking up and translating German references, the writer desires to acknowledge his great indebtedness to Dr. C. J. Colles, of this city.

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REPORT OF A CASE OF INJURY TO THE HEAD.

DEATH AFTER FIFTEEN YEARS FROM OTITIC MENINGITIS. EXTENSIVE NECROSIS OF PETROUS PORTION OF TEMPORAL BONE. AUTOPSY.

By J. B. Shapleigh, M.D.,
of St. Louis, Mo.

Although the cerebral lesions from aural disease have been reported in such abundance as to make them familiar to all, yet the following

[1] Stromeyer, quoted by Cohen—Diseases of the Throat.

case presents features perhaps sufficiently unusual and interesting to justify its addition to the list:

CASE.—Andrew S., colored, aged thirty-nine, was admitted to the City Hospital on September 4, 1889, with a diagnosis of malaria. Family history and hygienic surroundings good. Has drunk to excess in his time and uses tobacco. Has had malarial fever several times, and about twenty-five years ago contracted a venereal sore, supposed to have been chancroid. About fifteen years ago he was struck on the left side of the head with an ax and rendered unconscious for a few minutes. On regaining consciousness, he was very weak and fainted from loss of blood. He recovered from the injury in about three weeks, and was apparently as well and hearty as ever. After nine or ten months, however, he began to suffer from headache, which disappeared on the escape of pus from the wound on the side of the head. He has had similar attacks about once in every two years; relief being obtained in the same way, except that about eight years ago he noticed that the pus came from the left ear instead of the wound.

Present condition.—Patient complains of intense headache. Examination of the head reveals a scar behind and slightly above the left ear, extending downward and backward for a distance of about four inches. There is complete left facial paralysis. Patient cannot open his mouth more than about half an inch. He states that this condition and the paralysis date from the injury of fifteen years ago.

There are no other signs or symptoms of paralysis to date. Mobility and sensibility in the extremities seem to be normal. The headache was at first confined to the left side in the vicinity of the scar, but now extends over the entire head and down the middle of the back. He has had some fever and drowsiness, but no rigors or chills.

On September 10th I was asked to examine the patient's ear. His condition had not changed materially during the preceding six days. The auricle was in normal position and presented nothing unusual. The external auditory canal was completely occluded at a depth of one-half inch. This cul-de-sac contained a small amount of cerumen only. It was lined throughout with normal skin. The opposing wall offered firm resistance to the probe, and to the needle gave the impression of bone covered by a layer of fibrous tissue. The left temporo-maxillary articulation was very prominent, and the mastoid process seemed to be placed further forward and downward than usual..

There was no sign of any inflammation about the ear or surrounding parts—no pain, tenderness, redness, or swelling over the mastoid, no congestion of the auditory meatus; and there had been nothing to call the patient's attention to the ear for at least two years. Hearing, both by air and bone conduction, was *nil.* Patient stated that he "had not heard with that ear since the accident, and that his face had been stiff since then." Vertigo was present in a moderate degree. I could not ascertain whether or not it had been noticed in previous attacks. The intellectual faculties did not seem to be impaired. The diagnosis made was either a meningitis or cerebral abscess, probably resulting from ear disease—the absence of symptoms of compression at this stage favoring the former.

September 13. Vomiting last night and to-day. Hiccough this morning for several hours. Groans and begins to talk incoherently.

14*th*. Growing rapidly worse. Frequent vomiting, unchecked by bismuth and morphine.

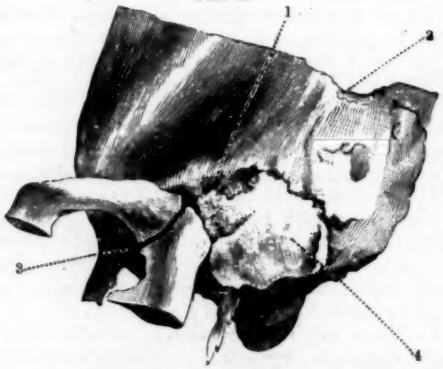
I saw the patient again at this time, and, although no symptom had developed tending to localize the cerebral trouble, advised, as a last resort, trephining the skull, suggesting a point one and one-fourth inches above and behind the external meatus as the spot at which to apply the trephine.

Dr. Dalton operated on the next day, enlarging the trephine opening to admit the finger. Nothing being found in this way, an aspirator needle was carefully inserted into the brain in various directions. No pus was obtained, but a considerable quantity of rather bloody fluid escaped, probably from the lateral ventricles. The patient did not bear the operation well, and died in about ten hours.

Autopsy.—On removing the brain quite a hemorrhage was seen under the pia mater on the left parietal lobe. The pia mater at the base of the brain was thickened and opaque, and pus was found in its meshes and under it. On section, both lateral ventricles were found distended by a blood-stained fluid.

In the left occipital lobe was a cavity as large as a pigeon's egg, with smooth, firm walls, and containing a purulent fluid. In the cerebellum on the left side of the vermiform process was a smaller cavity as large as a hazelnut, containing a purulent looking fluid, while to the right was a pinkish mass of about the same size—apparently a new growth.

FIG. 1.



Outer surface of temporal bone.

1. External auditory meatus. 2. Trephine opening. 3. Bony mass on inner side of neck of inferior maxilla. 4. Mastoid process.

The thickened dura mater was adherent to the greater part of the petrous bone, but was slightly elevated from the posterior surface over a cavity presently to be described; here also the thickening was greatest. No perforation of the dura was found, but the pus had burrowed under it as far as the foramen magnum. Pus was also found in the internal auditory canal. No lesions of importance were found in the other organs.

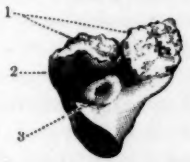
Examination of the temporal bone showed that the greater portion of the mastoid process had been completely separated from its base and

was displaced forward and a little downward, being held in its new position by a mass of dense fibrous tissue. The mastoid cells were obliterated. To the inner side of the neck of the inferior maxilla was firmly attached by osseous union a mass of bone. This was probably the condyle which had been cut off by the blow.

The articular surface of the glenoid cavity was destroyed and a false ankylosis formed. The inability to open the mouth resulted from this fibrous union as well as the adherent bony mass.

The posterior border of the inferior maxilla and the anterior border of the displaced mastoid were in contact, thus entirely blocking the external meatus, except above, where the closure was completed by a band of very dense fibrous tissue stretching from the zygoma to the anterior and upper border of the mastoid. The inner portion of the meatus was patent and contained a little pus.

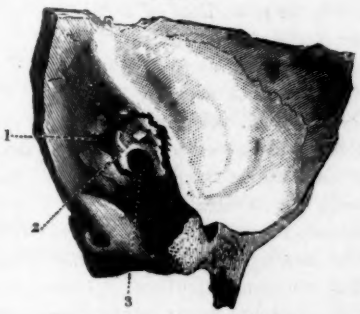
FIG. 2.



Inferior maxilla—seen from in front and above.
1. Rough articular surfaces. 2. Bony mass. 3. Coronoid process.

The membrana tympani was slightly thickened and perforated in its lower portion. The malleus and incus were in position, but the stapes could not be found. It had probably been destroyed by the carious

FIG. 3.



Inner surface of temporal bone.
1. Opening on posterior surface. 2. Necrosed bone. 3. Inferior auditory meatus.

process. The petrous portion of the temporal bone was the seat of extensive necrosis, which had almost completely enucleated the bony capsule of the labyrinth, the lower surface alone still maintaining its attachment to the pyramid. The necrosis was most marked in the softer bone on the outer side of the labyrinth, where quite a cavity had been

formed, opening on the posterior surface of the petrous portion at about the site of the aquæductus vestibuli. It was over this cavity that the dura mater was elevated.

The anterior wall of the tympanum presented an opening into the carotid canal about the size of an apple-seed. A sinus opening on the promontory led through the vestibule into the internal auditory meatus penetrating its septum to the outer side and just below the horizontal ridge. The wall of the Fallopian canal was eroded from above the centre of the oval window backward to its downward turn. Here it entered the cavity above mentioned and was lost, to be found again a short distance above the stylo-mastoid foramen. The wall between this cavity and the tympanum—that is, the posterior wall and angle of the latter—was perforated in many places and presented a sieve-like appearance.

Necrosis of the temporal bone, even of parts of the labyrinth, is not of necessity fatal. Exfoliation may occur and the sequestrum be removed through the external meatus or the mastoid process.

Cases of this kind, where the sequestra proved to be parts of the labyrinth, have been reported by many observers, among them Schwartze (*Arch. of Otol.*, vol. ix.), Politzer, Toynbee, Gruber, Pomeroy (*Trans. Amer. Otol. Soc.*, 1872), and Agnew (*Amer. Med. Times*, vol. vi.). Exfoliation of the entire labyrinth is much rarer. It may, however, occur; the dura mater by thickening and proliferation of connective tissue on its outer surface, being able to resist the spread of the inflammation and prevent the invasion of the cranial cavity. Toynbee reports such a case (*Arch. of Otol.*, vol. i.), where the sequestrum included the entire labyrinth with the internal auditory meatus and the commencement of the facial canal. About the same lines of separation were forming in the case here reported.

Sir Philip Crampton, according to Wilde, removed a sequestrum consisting of the entire labyrinth with the inner wall of the tympanum. Gottstein (*Arch. of Otol.*, vol. xvi.) removed from a girl of eight years a sequestrum in which could be seen a part of the squamous portion of the temporal bone, of the annulus tympanicus, of the mastoid process, and of the labyrinth with the fenestra ovalis.

Though the entrance of pus into the cerebral cavity is not necessary to the occurrence of meningitis or abscess of the brain, it may occur in several ways. Most commonly, perhaps, it breaks through the tegmen tympani or the roof of the antrum; or the inroad may be through the posterior surface of the petrous bone, sometimes without injury to the labyrinth, sometimes with its partial destruction or entire separation from the surrounding bone; or it may enter through the internal auditory meatus, to which access is gained by erosion of the wall of either a semicircular canal, the cochlea, the vestibule, the facial canal, or through either or both the labyrinthine fenestræ. It may advance by several of these paths simultaneously.

In the case reported the pus forced its way through the cochlea, vestibule, and facial canal into the internal meatus, thence to the brain; the advance in other directions being prevented by protective thickening of the dura mater.

The autopsy fully explains the symptoms presented by the patient on admission to the hospital—viz., headache, vertigo, fever, deafness, and facial paralysis. The patient stated that the deafness and paralysis appeared at once after the injury. With regard to the former he might easily have been mistaken, but scarcely in regard to the latter. I am inclined to believe that the blow injured the facial nerve in the descending portion of the Fallopian canal, thus causing immediate facial paralysis, but that the hearing was at first only interfered with by the occlusion of the external meatus and while of so little practical use to the patient as to be considered lost, only became absolutely *nil* when the suppuration had advanced to the labyrinth.

In regard to treatment, the question naturally arises, Ought an attempt to have been made to penetrate the external meatus or to open the mastoid?

With the information to be gained ante-mortem I think we must answer in the negative. First, the indications were that the canal was closed by bone, probably the superior-posterior wall of the osseous meatus driven in by the direct force of the blow. Operations for relief of complete atresia of this nature are difficult, and not to be undertaken without some favorable information or inference as to the condition of the deeper parts of the ear. All the facts obtainable in regard to this point were decidedly unfavorable. Again, supposing that, although two years had passed with no aural symptoms, the disease had originated in the ear, the history of the case and the absence of all signs of mastoid inflammation pointed to the petrous portion of the temporal bone as the probable site of the trouble rather than the mastoid itself. Finally, cerebral implication was so evident that any operation must have been considered only as a last resort, and, under the circumstances, it was thought wiser to wait for some symptom to develop which might aid in localizing the operation. As none appeared, the trephine was applied in the situation best suited for reaching both the middle and posterior fossæ of the skull.

AN INVESTIGATION INTO THE ETIOLOGY OF PHTHISIS.

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AND

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II.

On the Clinical History of Phthisis Pulmonalis.

By E. L. Shurly, M.D.

To present the following remarks upon the clinical history of phthisis pulmonalis, without reference to its etiology, would seem to be a disregard of established notions of order. But, as the subject of etiology involves pathology, and as the pathology has not yet been entirely presented by my colleague (Dr. Gibbes), it is deemed proper to leave all etiological considerations to a future time. A typical classification of the subject upon a purely clinical basis, of course, is well-nigh impossible, since a given group of symptoms or signs will embrace two or more commonly recognized varieties. I shall, therefore, present the following classification, having in mind the course only: 1st, acute; 2d, subacute; and 3d, chronic phthisis pulmonalis, leaving out of the category so-called miliary tuberculosis, which, for reasons afterward to be given, seems to be a disease of the lungs coincidently only with other organs; although, as we are aware, generally embraced under the title of pulmonary tuberculosis.

Acute Phthisis Pulmonalis, like the other classes indicated, has its period of accession, its symptomatology, and its physical signs, all of which are, in the majority of cases, quite similar to each other. The stage of accession involves antecedent injury or disease, such as an essential fever, dysentery, syphilis, rheumatism, previous acute pulmonary or bronchial attacks, etc., congenital defects of structure or function, bad habits or food, unsalubrious surroundings, over-work, over-worry, or other abnormal demands upon the economy. The symptomatology, in the rough, presents about the same features as the other varieties, except in the order or intensity of occurrence. It includes cough and expectoration, hæmoptysis, pyrexia, with rapid and small pulse, anorexia, indigestion, constipation (sometimes diarrhœa), emaciation, diaphoresis, mental irritability or delirium; hoarseness and other laryngeal symptoms, ischio-rectal abscess, etc. The course is a short one, usually from two to six months, and each successive step is marked by persistent intensity.

The physical signs at first are obscure; the early dyspnœa, or increased movement of chest, is frequently in part due to pyrexia; percussion may show no change (relatively) of resonance. Auscultation will, however, show diminished vesicular, and often interrupted, murmur, prolonged expiratory murmur—perhaps in patches—with abnormal transmission of heart sounds.

Soon, however, clicks, creaking, and fine moist râles (crepitant and subcrepitant) appear, generally at the upper part of the chest (unless a previous croupous pneumonia has existed, when a lower lobe may be the seat of the advanced physical signs). The clinical history would indicate that in the majority of cases it is essentially a lobular pneumonia very generally disseminated, and not a miliary tuberculosis, as so often classified, for the following reasons: Acute tuberculosis (of which there are two forms) is a general disease, indicated by a steady, rapid loss of vitality, with a steady pyrexia, uniformly rapid and small pulse, absence of continued rigors and exacerbations and remissions; in other words, not typically hectic. There is little or no cough (unless latterly, when the lungs may be invaded); tenderness of the abdomen is a constant symptom, either of the anterior surface or of either hypochondrial region; diarrhœa is an early and more or less continuous symptom, and delirium more or less active is exceedingly common. Besides, the physical signs of the chest are almost absent, excepting, perhaps, dyspnœa, which, in this event, as before mentioned, may be very properly ascribed to pyrexia. Of course, if the patient lives long enough for the lungs to become invaded, there will be observed the usual physical signs (clicks, creaking, and moist râles) with dulness on percussion, etc. In monkeys inoculated with tuberculous sputum cough may be absent throughout the whole course, while in monkeys who contract phthisis (broncho-pneumonia) in the ordinary way (excepting by forced inhalation of dried sputum) cough is an early and persistent symptom.

The morbid anatomy also coincides with this observation, for, in the former, even at the end of two months (if they live that long), the lungs are scarcely invaded, while the spleen, liver, and other glandular organs are everywhere studded with caseous masses in various stages of degeneration. In the latter, on the other hand, the lungs are the principal seat of disease, showing more or less caseation and excavation, according to the stage of the disease (just as is observed in human phthisis), with little or no change in the other organs. Should life continue to an unusual extent, however, the disease may extend to some of the other organs. Again, acute miliary tuberculosis is not preceded by previous pulmonary disease; in fact, as is well known, may not be recognized until the time of autopsy, while acute phthisis shows itself primarily in the pulmonary apparatus. This leads us to the consideration of another point, viz.: Whether we may not be able to recognize *clinically* two

forms of miliary tuberculosis, especially in children. The one more acute, presenting all the symptoms of typhoid fever (perhaps somewhat anomalous), great adynamia, early delirium and pyrexia, abdominal tenderness with more or less diarrhœa, etc., running a course which is not typical, and showing an anomalous range of temperature. Such cases are by the most careful practitioners often diagnosed as either typhoid fever or peritonitis, until the autopsy reveals the tuberculous nature of the disease. The other form I would call attention to, is slower in its course and effects; pyrexia and emaciation are steadily progressive, not, however, reaching an intense state for, perhaps, a few weeks, and then rapidly going on to caseation and blood-poisoning. These cases show a great irregularity in their symptomatology; for instance, a great degree of adynamia rapidly succeeded by incredible strength for a short time, constipation soon succeeded by obstinate diarrhœa, anorexia and coated tongue, followed by appetite and a show of digestion, mental excitement and then hebetude, and so on, the pulse and temperature, however, keeping steadily abnormal. In either class there may be little or no cough, and scarcely any physical signs denoting disease of the chest.

Without going into further detail, suffice it to say that these two varieties of disease (not infrequently met with) differ from one another mainly by the typhoid character and more rapid course of the one, and the more general symptoms, slower course, and graded progression of the other. Notwithstanding the difficulty of making accurate clinical observations in the lower animals, we have been able, in at least two cases, to observe this differentiation in monkeys.

Subacute Phthisis, embracing all varieties between the acute and chronic forms, is undoubtedly a broncho-catarrhal or plastic pneumonia, of slowly continuous or intermittent progress, more or less localized. It may be the sequence of an acute bronchitis, a lobar or lobular pneumonitis, and by successive steps may proceed from above downward, toward the alveoli; or, originating in the lobules, proceed thence outward (as I attempted to show in a paper read in Buffalo two years ago). This course—alternate latency and intensity—is not so prominent a feature as in the chronic form, but is sufficiently striking to constitute a distinction from the acute form. Subacute phthisis is often complicated with intercurrent attacks of pleuritis, frequently regarded as tubercular pleuritis, which, of course, decidedly alter the course and sometimes the pathogenesis of the case. As shown by Aufrecht, Talma, and others, it is probably not so much the deposit of so-called tubercle, as an extension of the inflammatory process, which brings about this complication.

Patients suffering from this form of the disease have often (although not always) a bad family history, have never been robust, show defects of structural development, either general or in the chest; show a notable

lack of muscular strength—incapable of much improvement; have been throughout their lives subject to "taking cold;" have suffered more or less from some form of nasal, or naso-pharyngeal catarrh, indigestion, etc. If females, have suffered from excessive lactation, or from some uterine disease. This low state of the "economy" being unfitted to withstand the viscissitudes of every-day life in a northern climate, sooner or later shows signs of permanent pulmonary disease, such as cough, hæmoptysis, pyrexia, nocturnal diaphoresis, expectoration, anorexia, emaciation, progressive exhaustion, etc., intermissions and exacerbations taking place so that the whole course may occupy from one to two years. The physical signs, obviously, are variable, at one time showing evidence of extending inflammation and softening (moist clicks, crackling, mucous râles, with patches or areas of bronchial respiration, and bronchophony). Then signs of retrogression (dry râles, etc.) until at last, cavernous, bubbling, and gurgling râles, with signs of extended consolidation, indicate the final disorganization.

The exacerbations and remissions of this form—whether depending upon exciting causes or not, and whether ushered in with hæmoptysis or not—serve to distinguish it from the acute type; while the comparatively shorter and less complete remissions plainly distinguish it from chronic phthisis. There are cases, of course, where the line of demarcation is indistinct, especially between acute and subacute. But this fact is also applicable to other diseases as well. The ultimatum of cases ending fatally is caseation, cavitation, and often tuberculosis. This latter event, however, it seems to us, in no way invalidates the belief—based upon experiments upon monkeys, and a study of the clinical history of phthisis in children—that each form is essentially an inflammatory process, and not infrequently terminates in recovery, while recovery from general or miliary tuberculosis, as far as known, is impossible.

The high degree of adynamia often observed, as compared with the limited amount of evident local disease, might be urged in favor of the tubercular origin of the disease, if it could not be shown that the pathology and clinical history of tuberculosis do not coincide with such a view. And, further, if it were not well known that many cases of phthisis pulmonalis—with considerable lung tissue involved—show a comparatively small degree of adynamia.

Chronic Phthisis Pulmonalis, as is well known, embraces a class of cases undoubtedly similar pathologically, and certainly similar clinically, to the preceding forms, excepting, perhaps, those denominated fibroid, by Sir Andrew Clark, and a variety commonly known as mechanical, which are supposed to differ from the ordinary types on account of the adenoid and connective tissue of the lungs being the seat of the principal morbid action. Although it must be acknowledged as a fact that some such peculiarity belongs to this class of cases, yet it is a

matter of common observation that a sort of fibrosis is set up by nature in defence of nearly every attack of any considerable duration, and constitutes the most important factor of remission or "a stay of proceedings."

The clinical history of chronic pulmonary phthisis, either in its longer or shorter undulatory course, is too familiar to need detailed mention here; for all the symptoms and all the physical signs observed in disease of the lungs are, or may be, present in the course of a given case. The long duration and irregular course of many of the cases of idiopathic origin are certainly one of the inexplicable puzzles which beset the practitioner very often, and would seem to alienate it from all so-called septic or blood diseases, excepting, perhaps, syphilis, which, it must be conceded, it often resembles in its clinical history.

Whatever its pathology may show, the clinical history labels chronic phthisis an inflammatory disease of successive limitations, involving, little by little, different portions and tissues of the lungs and, therefore, producing different lesions from time to time, according to the extrinsic circumstances. What part therapeutics may play in determining the length or variability of its course, cannot be laid down as yet.

Whatever part the bacillus tuberculosis may play in the pathogenesis of the several varieties or classes of pulmonary phthisis, it would appear, from a clinical standpoint, at least, that we are forced to retain the ideas of the older authorities: That phthisis pulmonalis is primarily an inflammatory process, whether subsequently tubercle or any other degeneration appear among the inflammatory products or not, and that phthisis pulmonalis and tuberculosis are really two distinct diseases.

III.

The Tubercle Bacillus.

By Heneage Gibbes, M.D.

It will be seen from the foregoing papers that our investigations have resulted, so far, in showing that phthisis pulmonalis and tuberculosis have distinct features, both clinically and histologically. It is necessary now to review the grounds on which Koch's tubercle bacillus has been so universally accepted as the virus of tuberculosis.

First, it is assumed that the method used in cultivating this organism frees it entirely from anything which may have been removed from the lungs with the portion of tubercle first taken to make the cultivation.

Secondly, it is stated positively that the lesion produced by the inoculation of a pure culture of tubercle bacilli, produced by these methods, results in the production of tubercles identical with those found in the human lung.

With regard to the method used in cultivating the tubercle bacilli, some remarks made by Dr. Charles Creighton, in a pamphlet published by him in 1884, deserve careful attention. He says:

"It does not appear to be generally known that the method whereby Dr. Koch professes to cultivate the microörganisms of tubercle apart from the tubercular substance and apart from all other bacteria, does not fulfil the original intention of his "dry" method at all. Dr. Koch himself never acknowledges the change of intention; on the contrary, when he announces that he will apply the dry method of pure cultivation to the bacilli of tubercle he refers the reader to page 18 of his former work (*Mittheilungen aus dem Kaiserlichen Gesundheitsamte*, vol. i., Berlin, 1881) for the principle of that method, and for a statement of its practical advantages, and in the passage referred to we find the following: 'For the subsequent cultivation of the bacilli no reliance can be placed on any method that does not provide, as far as possible, for the exclusion of foreign germs, for the isolation of those which are the objects of our study from others, which it is impossible absolutely to exclude. Such separation cannot be effected in liquid media, and we must have recourse to solids, on which each germ reproduces itself at the point where it was originally deposited.' When Dr. Koch in the opening sentences of section II of his work on tubercle (*Mittheil. aus dem K. Gesundheitsamte*, vol. ii., 1884, pp. 46–47) announces that he will adopt the dry method of cultivation as being the best, he does not discuss its suitability to the peculiar circumstances of bacilli *deeply involved in the midst of tuberculous tissue;* he merely refers his readers to a passage which is irrelevant to the question in hand, however interesting it may be in itself; and he then proceeds to apply a sort of dry method, not to separate what he calls 'strange' or 'foreign' bacteria from the rod-shaped organisms of tubercle, but to eliminate the tuberculous matter itself."

Dr. Creighton quotes from the *Medical Times and Gazette*, July 15, 1882, an article on the "Cultivation of Organisms on Dry Surfaces:"

"He [Dr. Koch] started, indeed, with the same intention, viz., to separate the bacilli of tubercle from other bacilli that may have been mixed with them. But that purpose very soon became subordinated to another and more arduous task—the separation of the tuberculous matter from the organisms present in it. So absorbing did the new factor in the problem prove to be that he disregarded altogether his original purpose of separating one kind of bacillus from another; if anything led him to suspect that the bacilli of putrefaction were present, he did not attempt to eliminate them, but he discarded that particular test-tube altogether. Thus, the dry method, which had certain recommendations for one particular purpose, came in the course of the research to be used for another and quite different purpose, for which it had nothing originally to recommend it. The task of separating various kinds of bacilli from one another being given up, no one would choose the method of cultivating on a dry surface in preference to cultivating in fluid, if his intention was to show that he had completely eliminated the presence of virulent tubercular matter. . . . Dr. Koch nowhere professes to use the fractional method. I can find only one passage in the whole of his monograph (p. 52) in which he tells us how much of the dried-up matter he took from the first test-tube to transfer to the second; and in that passage he merely says 'einige schüppchen.' It appears to me that this is the crux of the whole cultivation experiment, and Dr. Koch passes it over almost in silence. . . . It is in vain for Dr. Koch and Mr. Cheyne to assure us that the dried-up matter which they scraped together for an inoculation experiment from the serum-coated surface of the last test-tube was bacilli and nothing else. No one would expect to find morphological traces of tubercle in it; the heat of an oven at 98° F. for several weeks would be sure to resolve the original pieces of tubercle to amorphous particles. But nothing is anywhere said of a residue

of tubercular dust on the surface of the serum; and we are left to suppose that the detritus of the tissue entered into the composition of the crusts and scales and was transferred with them. It was not until the last cultivation was finished that Dr. Koch really pulverized them (in a mortar with a little boiling water) previous to inoculatiug them upon animals."

"That the bacilli grew and multiplied in these crusts cannot be doubted, but there is no evidence to show that the substance which emerged from the routine process was essentially different from the substance that went in."

I have quoted so much from Dr. Creighton's article, as it will show that to an impartial observer there are several points in Koch's own history of his work which are open to adverse criticism. Many other observers have traversed the same ground; notably Spina, who took up separately every claim of Koch's and produced arguments and experiments to disprove them. Instead of meeting Spina's arguments in a scientific manner, Koch made an attack on him, accusing him of ignorance in the same manner he had formerly attacked Pasteur. This method of disarming criticism has been adopted by some of Koch's disciples. Dr. Formad, in a series of articles in the *Philadelphia Medical Times*, 1884, makes some pertinent remarks on the subject. In a visit to Koch's laboratory he states that Koch had an excellent staff of assistants, but it was a matter of surprise that there was not a single competent pathologist connected with the laboratory. This remark I have heard from many who have worked in Koch's laboratory and its significance can hardly be underestimated. Dr. Formad states:

"Watson Cheyne, to whom the British Association for the Advancement of Science by Research had intrusted the investigation of tuberculosis and the testing of Koch's researches, did not do justice to his mission. From Cheyne's report (*The Practitioner*, April, 1883) it is seen that he made no earnest attempt to study the nature of tuberculosis, because all he did was to study and experiment with bacteria met with in tuberculous lesions. He went to see some of the different mycologists, consulting only believers in the germ theory; obtained some French and German bacteridian material, and, after testing the same, he reports, with great emphasis, that Koch's tubercle bacilli are the more genuine tubercular virus than Kleb's or Toussaint's micrococci. He did not inquire, nor did he care, whether tuberculosis may have any other cause! He simply imitated Koch's experiments with the bacillus material in rabbits and guinea-pigs (only),and obtained, of course, the same results. Furthermore, he made some control experiments which, as I will show, pass for naught, as they are much more deficient than those of Koch."

I have already alluded to the unreliability of Watson Cheyne's work. In spite of all this, in *Green's Pathology*, 7th ed., 1889, p. 347, Eng. ed., occurs the following:

"These results (Koch's) have been fully confirmed, especially by Cheyne (*Practitioner*, April, 1883), and there is now no doubt that they are absolutely true."

Dr. Formad's articles extend through four numbers of the *Philadelphia Medical Times*, 1884, and they are well worth reading at the present time.

In regard to cultivations on solid media, such as the blood serum used by Koch, the investigation made by Dr. Klein into the action of the jequirity bacillus has a most important bearing. These researches are published in the supplement to the *Thirteenth Annual Report of the Local Government Board*, London, 1883–84. In 1882 de Wecker, of Paris, drew attention to the therapeutic value of the beans of Abrus precatorius. They are used in the Brazils under the name of jequirity in the case of granular lids or trachoma. Sattler found that when an infusion of the beans had been made, after a time it would contain numerous bacilli resembling bacillus subtilis. Sattler cultivated these bacilli on blood serum and gelatin through successive cultivations and yet he found that they retained their specific properties. Dr. Klein made an infusion of the beans with every possible precaution to prevent contamination, and fifteen minutes after it was made inoculated the eyes of healthy rabbits with it, at the same time he inoculated a number of test-tubes containing sterile peptone solution, broth, etc. Intense inflammation was produced in the rabbits' eyeballs in twenty-four hours, while all the test-tubes were clear and limpid and they remained so. No growths of micro-organisms appeared. It was shown by Sattler that the spores of these bacilli would stand boiling for a few minutes. Klein took an infusion of the beans full of bacilli and spores and boiled it for half a minute; he then inoculated sterile test-tubes with this boiled infusion, these tubes were placed in the incubator and kept at a temperature of 35° C.; after twenty-four to forty-eight hours the fluids were found to be teeming with the jequirity bacillus. But no amount of this material produced the least symptoms of ophthalmia, the boiling had rendered it inert.

Drs. Warden and Waddell, of Calcutta, had, however, prior to Klein's experiment, isolated an amorphous solid which they named "Abrin." This was the poisonous principle of the beans and the bacilli had no action in the matter. It is obvious from this that some portion of the chemical poison had been carried over in each successive cultivation in the solid culture-medium. Can we say that Koch's experiments are free from the same fault? A number of experiments have been made from time to time by independent observers, which have caused them to express grave doubts as to the exact relation of the tubercle bacillus to phthisis.

THE NATURE OF THE LESION PRODUCED BY THE INOCULATION OF TUBERCULOUS MATTER IN ANIMALS.

I have already stated in my former paper that the artificial tubercle produced by the inoculation of human tubercular material in the lower animals in no wise resembles the typical human tubercle. I mean by this the reticular form which I have fully described, which is also fully described by Dr. Payne in his work on pathology, and there stated to be the type of tuberculosis. Neither does the artificial tubercle resemble

the other form or caseous tubercle already mentioned. The small, rounded nodules which form in the lungs and other organs of inoculated animals in few cases contain any giant cells, and when they are present they do not in the least resemble those found in the human lungs; they are exactly similar to those described by Zeigler in his researches with glass plates inserted into the tissues of animals; they also resemble those occasionally found in inflammatory tissue. It must be evident to every careful observer that the giant cells in the human lungs are not, as it were, accidental formations. From their similarity and from the arrangement of their nuclei they must all have been formed in a somewhat similar manner. It seems to me probable that they originate in the lungs from a fusion of the cells in the infundibula and alveolar ducts; their arrangement round the periphery of the cell, and the evident tubular appearance presented by some, which can be well seen with a binocular microscope, certainly favor this view, but this will not account for their formation in lymph glands. In tubercle of the testis, I have before now demonstrated the process of their formation from the fusion of the epithelium in the seminiferous tubes. Now, no one, I imagine, pretends to say that giant cells of this kind occur in artificial tubercle of the lungs. Next, the reticular stroma so well marked in the reticular tubercle of the human lung, is never seen.

Here, then, are two of the essential features of typical human tubercle which are absent from the artificial in lower animals. Where, then, is the resemblance?

In artificial tuberculosis there is an aggregation of round cells; this forms a nodule, which in the early stage is of a rounded form.

Careful examination shows this to consist of cells which vary in shape and size, but which in many cases are larger than a red-blood corpuscle, while a few assume large proportions and contain several nuclei. This is evidently some process of a subacute character induced by the inoculated material which acts on the normal cells, causing swelling and slow disintegration. To understand this process, it is necessary to examine sections from lungs or other organs where it is just commencing. For this it will be found advisable to inoculate several animals and kill them at varying periods, from ten days to a month or more. One of the best examples I have ever seen was in a monkey, which I inoculated with human sputum from a typical case of rapid phthisis; this animal died from accident twenty-two days afterward, and the only abnormal change was in the spleen. Some of the Malpighian corpuscles with a low power showed a small round mass in or about the centre, which had not taken the logwood stain in the same manner as the other parts. On examining these with a higher magnification they were found to consist of cells which were evidently those of the normal adenoid tissue, but under some abnormal influence. On examining the small arteries in the Malpighian

corpuscles they showed a thickening of their walls and obliteration of some of the muscle coat from the infiltration of a hyaline material. In some places this projected beyond the wall of the vessel. The appearances presented by these small arteries were somewhat similar to those seen in scarlatinal nephritis. Among the altered cells was also a quantity of hyaline material, in which they seemed to be imbedded. This hyaline matter stained very faintly with logwood. The cells themselves presented various appearances; they had become enlarged and the majority had altered their shape, becoming elongated or angular, but some were oval; all, however, had become more transparent. and the intra-nuclear network, now showing plainly, gave them a granular appearance. There was nothing to show any inflammatory change. The process seemed to be a gradual one. This is the appearance presented by the smallest nodules when examined with a one-twelfth oil immersion and good illumination. All sections from this spleen presented the same changes.

I then examined the lungs of another monkey which had been killed six weeks after inoculation and where the morbid changes in those organs were very slight. I found precisely the same appearances. I then examined the organs of various animals, all inoculated with human phthisical material, and I found that from the initial changes already described the process went on in a similar manner until the nodules became very much larger, the cells gradually becoming paler and disintegrating, until in the older nodules a mass of amorphous material occupied the whole of the centre; some slight inflammatory action was set up in these at the periphery in some cases. There is nothing whatever in these nodules at any stage that resembles the fibroid reticulum found in a typical miliary tubercle of the human lung.

It is as well here to notice a statement made by Friedländer, as well as by Cornil and Ranvier, that this reticular structure is not present in the fresh tubercle but is due to the hardening process. This I am positive is incorrect, as I have used various hardening methods and the result is always the same—either caseous or reticular tubercle. It is not likely that different hardening methods would produce identical results if those results were due to the hardening process itself. I always use, in these cases, strong alcohol, or Müller's fluid, and use these methods because I have to seek for the presence of bacilli; but if, in any case I wish to study the histological features, I then harden a portion of the tissue in chromic acid mixture, which could not be done if the bacilli had to be studied, as it prevents their staining.

I will now mention briefly the results obtained in an investigation carried on by me under the direction of Dr. Klein, for the Local Government Board, London, in 1883–84. A large number of guinea-pigs were inoculated with human sputum full of bacilli from cases of tuberculosis.

The experiments were made in my laboratory, and at the end of the year's work I submitted my report, together with microscopical slides of all the cases, to Dr. Klein. I will mention some of the conclusions he drew from the investigation. I quote from the supplement to the *Thirteenth Annual Report of the Local Government Board:*

"From this series of experiments we learn, then, that after inoculating guinea-pigs with sputum of human tuberculous lungs full of tubercle bacilli, the animals become, in the majority of instances, afflicted with a general pathological condition consisting in enlargement and deposit of tubercles in the lymph glands, lungs, etc. . . . We seem to be yet far from understanding the share of the bacilli in the production of what we speak of pathologically as tubercles. . . . Mr. Watson Cheyne says that the tubercle bacilli first invade the epithelial cells and then set up a multiplication of these, associated with certain vascular inflammatory changes, leading to the formation of tubercles. I have before me sections through typical tubercles in all stages in the lung and liver of some of the guinea-pigs above described, and I fail to see that this statement is in any way borne out by the facts of the case. I find some tubercles in liver and lung which are in an early stage of formation and in which there is not a trace of any tubercle bacilli . . . owing to the fact that in the caseating lymph glands, near the seat of inoculation, and in the caseous or advanced tubercles, the bacilli occurred numerously, we are justified in assuming that caseous matter is a very good nidus for their multiplication. But we may not, from the facts above enumerated, infer that the presence of the bacilli starts, so to speak, the several tubercles. . . . I think that their presence in a tubercle does not necessarily mean that they preceded the tubercle; and, if this be conceded, as I think it must be conceded, it further follows that the formation of the tubercles is not a direct result of the presence of the bacilli. The next series of experiments was made on rabbits, and this is the conclusion drawn: From this we see, then, using human tubercular matter full of bacilli, no general tuberculosis was produced in rabbits; in one instance only a local effect—abscess—was produced containing bacilli; in half the instances a localized pneumonia with bacilli was established, and that was all. We have, then, a marked difference between guinea-pigs and rabbits as regards human tubercular matter."

In the following year I made a series of experiments in feeding guinea-pigs and rabbits with human tubercular matter—*Fourteenth Annual Report Local Government Board*, London. Klein says:

"On comparing the results of the above experiments with those produced by subcutaneous inoculation . . . it will be seen that the effect of feeding animals on tubercular matter differs little from that obtained by inoculation . . . in the guinea-pigs; though a general tuberculosis was produced, the process did not seem so rapid as when the tubercular matter was inoculated into the system. . . . In rabbits the morbid change was confined to the lungs, and even in one allowed to live for over thirty-six weeks. No other organ was affected. . . . It is worthy of notice, that in rabbits, no matter whether the virus had been introduced by feeding or by inoculation, the lungs were the only organs affected. . . . The distribution of the tubercle bacilli appears to vary very much, but it has this constant feature: it is always associated with caseation. In many organs taken from animals killed in the early stages of tuberculosis—*i. e.*, at the very commencement of the process—the most careful examination of a very large number of sections failed in every instance in detecting any tubercle bacilli."

I have since this carried out a large number of experiments with monkeys in the same manner, and I have invariably found the same

results. The lesions produced in the monkey are identical with those of the guinea-pig and I could produce no change in the process by inoculating from one animal to the other, and *vice versâ*. It will be seen from the above, that the tubercle bacillus—the cause of tubercular growth—is invariably absent from the first commencement of the disease-process it initiates and does not appear on the scene until the lesion it has produced has begun to decay—that is, caseate. The only way to get over this by those holding the bacillary views was to ignore it, and that is what was done. Surely, now, after these years the subject may be approached in a scientific manner and the above experiments disproved if possible. Many of the statements made contradicted themselves. Dr. Payne, in his work on *Pathology*, p 254, under the heading "The Processes of Disease," speaking of the action of microörganisms, says:

"They do not cause overgrowths directly, but only produce the reaction growth of inflammation above described. This growth is, accordingly, limited to the connective tissue and is not essentially different from that set np by other injuries."

At page 489, in speaking of the action of tubercle bacilli in pulmonary phthisis, he says:

"Within the alveoli, and possibly in the smallest bronchioles, they set up changes resulting in the formation of a miliary tubercle. It is now clearly established that the tubercle is formed at first inside the alveoli, though at one time it was thought to belong especially to the interstitial structure of the lung."

Here is a definite statement as to the action of the bacillus, but its action is here said to be on epithelial structures, not on connective tissue, as stated before. Dr. Payne, therefore, must mean that the reticular fibroid structures, as well as the giant cells, are formed by the action of the bacillus on the walls of the alveoli of the lung, which are composed of cells of hypoblastic origin. Now, in many cases of tuberculosis where the tubercles are of the reticular form, identical tubercles are found in the lymph glands. Are we, then, to understand that the tubercle bacillus is able to form a reticular tubercle from material, no matter whether it is of hypoblastic or mesoblastic origin, and this tubercle is exactly similar in either case? At page 498 he says:

"The inoculated disease must necessarily be considered as the same since they may be derived from human tubercle, and their anatomical characters are identical."

All my experience in inoculating animals goes to disprove this statement, as I have said before; and further, the bacillus cannot be found in the earliest stage of the change it is supposed to initiate.

In the case of the monkeys before mentioned I carried out two elaborate series of experiments to try and find the tubercle bacillus in the commencing nodules, using three or four of the most approved methods

of staining, and in some cases leaving the sections in the stain four or five days. These experiments were conducted with the greatest care, and yet not one single bacillus could be found with a one-twelfth oil immersion or Zeiss's apochromatic lens. Among the control experiments at the same time with the same stains, sections of lungs with tuberculosis that had been in spirit for eighteen years, gave multitudes of bacilli brightly stained, sputum kept in the open air for three months showed numerous bacilli, and sputum spread in May, 1883, on cover-glasses and kept in an ordinary pill-box, came out as brilliantly as when perfectly fresh. I think after this I am justified in considering that the bacilli could not be found, because they were not there.

If, from the time of Koch's announcement of his discovery in 1882 up to the present time, there had been series of investigations all more or less confirming it, there would be nothing at all surprising in the fact that the majority of the writers of the present day should accept it as an established fact. But that this is not the case is shown by the authors of the latest text-books in the English language quoting as their authority work done in 1882–83, which has been shown by many investigators to be unreliable.

In speaking of pulmonary phthisis Dr. Frederick T. Roberts, of University College, London, in his *Hand-book of the Theory and Practice of Medicine*, 7th ed., 1888, p. 451 (Eng. ed.), says:

"Without entering into any discussion on the subject, I must still express my concurrence with those who take a wider view of the pathology of this complaint than to regard it as being always tubercular, and still less as invariably requiring the action of tubercle bacilli for its development."

Dr. Douglas Powell, in his work on *Diseases of the Lungs*, says, page 280 (Eng. ed.), 1886:

"It cannot then be said that the position of the tubercle bacillus, with regard to the etiology of phthisis is as yet established, although so intimate and exclusive is its association with the lesions of that disease that by its recognition in excreta or expectorations, we obtain a valuable criterion for diagnosis in obscure cases."

Aufrecht, in a work recently published, says he cannot see how medical men can think and believe that the bacillary origin of tuberculosis is an established fact. He thinks the adoption of the above view has brought confusion into the clinical side of the question. He says the outcome of his investigations leads him to think that the pathological change is not the same in all cases, the disease not running the same course clinically. This is important as coming from a man who has worked with Koch on the spot, and the book is well worth reading.

I have said enough to show that there is still room for work before this question is finally settled.

There are one or two interesting points that have occurred in my

investigations which may be worth mentioning. One of these was where I inoculated three monkeys at the same time, with the same sputum, from an acute case of phthisis. Ten days after the inoculation one of the monkeys seemed to be ill and weak, although previously I could see nothing the matter with him; he was not very carefully examined, as he was savage and had awful teeth, and on the next day I chloroformed him. On making a post-mortem examination, I found that he was the subject of general tuberculosis in a most marked degree. On examining the place where I had inoculated him, I was unable to find the slightest trace of the puncture; the sputum had been absorbed without producing any inflammatory symptoms whatever. This seems to show that tuberculosis is a constitutional disease and that animals suffering from it are insusceptible to further inoculation.

The other two monkeys developed large abscesses at the seat of inoculation. When I opened the abdominal cavity of this monkey, I found a fine living specimen of pentastoma constrictum lying free in the omentum. It measured just an inch in length. I have often found them encysted in the liver of monkeys, but never before free in the abdominal cavity. Pentastoma constrictum has been found in the human liver and lungs, and this case of the monkey shows that it is possible for it to get free in the human abdominal cavity.

Another point having some bearing on the heredity of tuberculosis may be of interest. I inoculated two guinea-pigs with the same human sputum; one of these was a male and the other a pregnant female. The male died twenty days after inoculation with general tuberculosis. About a month after the inoculation the female had four young; she died five months and twenty-eight days after inoculation, of general tuberculosis. A second experiment on two females was made, in which the non-pregnant guinea-pig died thirty-five days after inoculation; the pregnant one had four young and died four months after inoculation. I kept these young guinea-pigs separate from others, and as soon as they were old enough, I bred them in and in (brother and sister), keeping each lot distinct. I did this in the one case for five generations, in the other for seven, and out of every litter I took one when half-grown and killed it, and examined all the organs. They were in every case perfectly normal.

I tried several experiments, such as placing one of a litter in a cage with two inoculated animals, and keeping it there for a week, while others were allowed to remain all the time in the house where the inoculated animals were kept; I found, however, that in these animals nothing short of actual inoculation would produce tuberculosis, and then it differed in no way from that produced in other guinea-pigs. Here there were animals notoriously prone to become tuberculous in their ordinary state, rendered doubly so, one would think, from their history and sur-

roundings, and yet they did not become tuberculous unless the tubercular matter was actually introduced into their systems.

In my next paper I shall discuss the question of bovine tuberculosis and spontaneous tuberculosis in other animals and birds; also cases where the liver and other organs of animals, birds, and snakes contained numbers of bacilli having the distinctive reaction of tubercle bacilli, but without the formation of tubercles.

AGORAPHOBIA AND ALLIED MORBID FEARS.

By C. W. Suckling, M.D. (London), M.R.C.P.,

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A few months ago Dr. Garman, of Great Barr, asked me to take a patient of his into the Queen's Hospital for observation and treatment. I found that she was suffering from well-marked agoraphobia. This was the first case I had met with in a large clinic of nervous disorders during the past nine years. I therefore considered that it was sufficiently rare and interesting to form the basis of a paper upon this affection and other allied morbid states of mind.

On referring to the literature of the subject I found it very scanty. No mention is made of it in many of our chief text-books of medicine. Dr. Roberts has contributed a short article upon the subject to *Quain's Dictionary of Medicine*. Dr. Gowers, in his admirable work on *Diseases of the Nervous System*, makes no mention of agoraphobia or other morbid fears, and, in fact, scarcely notices neurasthenia itself. Ranney says nothing about it, though he writes fully on neurasthenia, as might be expected from an American author. M. Rosenthal, in his clinical treatise on *Diseases of the Nervous System*, mentions agoraphobia as one of the symptoms of chronic cerebral congestion, and states that he has seen two cases following mental overwork. He also states that it may occur during prolonged gastric disturbance. Dr. Grainger Stewart, in his clinical lecture on "Giddiness," briefly dwells upon the condition. He reminds us that Westphal, in 1872, gave a most careful clinical description of agoraphobia. In 1878 Legrand du Saulle treated the subject in a masterly manner.

In the *British Medical Journal*, vol. i., 1879, is contained an abstract of a paper by Dr. Meschede, of Cassel, who described a form of mental affection the reverse of agoraphobia, namely, a dread of closed spaces and small rooms. This condition is called clithrophobia or claustrophobia, and is evidently closely allied to agoraphobia, the patient in both instances being unable to form an accurate conception of the dimensions

of his surroundings. In the *American Journal of Insanity*, vol. xlv., Dr. Andrea Verga describes his own case. He suffered from acrophobia, or an intense dread of being in high places.

Dr. Raggi, in the *Gazette des Hôpitaux*, 1878, described a mental affection in which the patient could not endure being within any enclosure, this being the antithesis of agoraphobia, though closely allied to it in its nature.

In the *Lancet*, January 10, 1885, a surgeon relates the particulars of his own case. He suffered first from religious mania, brought on by overwork and anxiety. When he recovered from this, agoraphobia supervened. He dreaded going out lest he should be taken ill.

Dr. Sutherland relates a case in the *Lancet* of January 17th, of the same year, and he claims that it is usually due to sexual or alcoholic excess.

Another case is related in the *Lancet* of April 25, 1885. I have looked through the whole of the volumes of *Brain*, hitherto published, and have failed to find any mention of the condition.

In the *Journal of Mental Science*, vol. xxxiii., is contained a translation of an article by P. J. Kovalensky, Professor of Psychiatry and Neurology at Karcov, on "Folie du Doute, or the Delusion of Doubt." The article is very interesting, and the author discusses the relation of these morbid fears (pathophobia) very fully. He describes neurasthenia as the soil from which grow up the degenerative psychoses or neuroses. The subjects of these fits of morbid fears are usually neurasthenics, the unstable condition of the nervous system being either inherited or acquired. It is well known that the children of neuropathic parents often inherit either decided organic modifications of the nervous system or a predisposition of the nervous system to psychosis or neurosis. In the first case idiocy, in the second neurasthenia, hysteria, and insanity appear. Beard calls neurasthenia the "American disease," but Dr. Kovalensky states that it might more correctly be called the "Russian disease."

Neurasthenia is a very common disease. The majority of its victims may, under favorable conditions, pass through life without developing morbid fears or insanity, but some fail in the battle of life and develop serious affections.

The term agoraphobia is derived from two Greek words, ἀγορὰ, a market-place, and φόβος, fear. It is certainly a very good name for the affection.

It must be remembered that agoraphobia, or a morbid dread of being in an open space, is not a disease, but a symptom only, and it is only one of a group of very numerous morbid fears that may supervene in neurasthenic people. These morbid fears are almost innumerable, and it is folly to attempt to name each particular fear, but such terms as agoraphobia and clithrophobia (dread of open and closed spaces) are certainly

worth retaining, for these are among the most important of such fears. An agoraphobic patient is completely incapacitated for any outdoor employment, and in an advanced stage is quite unable to leave his house.

The term mysophobia is applied to morbid fear of infection, astraphobia to a morbid dread of lightning. The whole condition might be termed pathophobia, the varieties scarcely necessitating a separate name.

With every discovery in science a morbid fear may be developed. For instance, a young woman was brought to me at the Queen's Hospital recently, by her mother, who told me that she had a dread of getting into a tram-car, fearing that she would die in it, and being seized with severe trembling and palpitation on merely seeing a car. This patient had been in an asylum some years previously.

Perhaps telephone fear also exists.

In all these cases of pathophobia there is an evident absurd disproportion between the cause and the amount of fear produced. The subjects of these morbid fears are fully aware of their absurdity, but cannot control themselves, and cannot be reasoned out of them; moreover, they act upon their fears. The young woman who dreaded a tram-car walked five miles to the hospital, while her mother travelled by the tram.

The subjects of these morbid fears are usually neurasthenic; in many cases this neurasthenia has been inherited, there being a history of epilepsy, insanity, nervousness, or some other neurosis in the family.

In rare cases no family history of neurosis can be obtained, and the neurasthenic condition has been brought on by overwork, worry, excessive lactation, frequent pregnancies, sexual excess, or other debilitating cause. Later on, morbid fears supervene upon the unstable condition of the nervous system, and finally, actual insanity may compel the friends to send the patient to an asylum. I have been struck with the marked potency of childbearing as a cause of agoraphobia and allied morbid fears. The patient whose case I relate later on attributes her illness to childbearing. In another case, also, the sister of a medical man was seized with intense agoraphobia after her first confinement. The affection lasted several months, but she recovered after living at Brighton for some time.

These morbid states are really conditions of partial emotional insanity, and in some cases end in well-marked insanity.

A patient who was under my care for acute hypochondriasis, and whose visits I dreaded from the long and detailed list of symptoms he would persist in writing down for me to read, each one of which I had to explain, and who would, on leaving me, return again after getting a few yards from my rooms with a fresh symptom, developed the dread of infection. He would wash his hands dozens of times in the day, and would not touch anything without washing directly after. Later on he had a dread of dirt, then became violent and dangerous. He was in an

asylum for a few months and was discharged cured. His sister was also in an asylum, and the family history of neurosis is well marked.

The morbid fear present may remain unchanged through life. It may disappear, to be followed by some fresh fear, or complete recovery may supervene. I have seen recovery supervene where the patient's circumstances have been greatly improved. There is no doubt that a want of success in life, entailing constant worry, is a powerful factor in the causation of mental diseases, especially in men.

The condition named "folie du doute," in which there is a marked enfeeblement of the will, may supervene in all cases of neurasthenia, either following a morbid fear or existing by itself, and without the appearance of pathophobia. Hammond relates an interesting case of "folie du doute." The patient, an intelligent gentleman, would spend an hour or two in determining whether he should take his coat or his shoes off first in undressing for bed. In the morning he would sit for half an hour with his stockings in his hands, unable to determine which should be put on first.

Minor degrees of this condition are frequently met with. After a heavy day's work, medical men will sometimes find themselves reading over their prescriptions two or three times, not feeling certain that they have ordered the correct doses. Similarly, business men will worry about their letters, being afraid that the wrong letters have been sent off.

To return to agoraphobia, one of the most important of the pathophobias. The essential condition of the affection is a morbid dread of an open space. The patient is quite well in his own house, but if he tries to cross the street, or to go into a field he is seized with an intense feeling of fright, and has to run to a wall, or fall down, being quite unable to proceed. Violent palpitation occurs, and a dreadful feeling of constriction is experienced over the heart. The legs feel weak and the knees give way, the patient staggers about, and all his limbs tremble. Numbness of the extremities also commonly occurs. There is no vertigo, as a rule, and no confusion of mind or loss of consciousness. Pallor of the face and profuse perspiration are usually present. The condition may supervene suddenly or gradually, and the patient is quite conscious of the foolishness of his fears, but unable to conquer them, the will power being in abeyance and quite subservient to the violent emotional disturbance. The special senses are usually unaffected. The patient is worse if the shops are shut when he goes out, and he finds relief from a trivial circumstance. He can walk behind a cart, or even if a child will walk by him. He can walk across a ploughed field, but not across a meadow. The symptoms rapidly subside as soon as the patient reaches his own house, but he will feel exhausted for some time after. In severe cases he is completely incapacitated and rendered a prisoner in his house. The condition may last a lifetime, or for months or years, and then dis-

appear, or definite symptoms of insanity may supervene. It is essentially neurotic, and not hysterical.

Neurasthenic patients are always shy and reserved. Their children are nervous; they suffer from a great liability to convulsions, terror, and nightmare, and are highly emotional. Such children have difficulty in getting through life successfully. Neurasthenic patients, in fact, are on the verge of insanity, yet proper treatment will, undoubtedly, in many cases save them.

A busy tradesman was brought to me two years ago, suffering from mental depression. His uncle had committed suicide and he himself had always been highly nervous. He told me that he was always contemplating suicide, and that he dared not be left alone. He had been sent to the seaside, but returned worse. I found that he lived at his place of business, that the rooms were very small and stuffy, and that he worked from twelve to sixteen hours a day. On my advice he lived out of town, riding to and fro on horseback, and diminished his hours of work to eight. In three months he was quite well, and has remained so since. He would most certainly have committed suicide or been in an asylum had he not changed his mode of living.

Considering the vast number of cases of neurasthenia that exist, and the dreadful sufferings entailed, it seems a pity that more attention is not given to the subject in this country. I have often found the rooms inhabited by patients suffering from melancholia and other morbid conditions of the brain to be small and dull.

There can be no doubt that gloomy surroundings and want of light and space at home are potent factors in the causation of mental diseases. I have at the present time three patients suffering from melancholia. One patient, a bachelor, has very small, uncomfortable rooms, without pictures or objects of interest in them, and I have no doubt that his disease was brought on mainly by the depressing effects of his surroundings. I have visited the homes of the other two patients and find them very gloomy.

In the treatment of agoraphobia and allied disorders, it is necessary to discover the cause of the exhaustion of the brain, and to remove it if possible. Nervine tonics, such as valerianate of zinc, the hypophosphites, iron, quinine, and phosphorus are useful. A residence at the seaside or in some elevated country district does good. A liberal dietary, and moderation in stimulants, tobacco, tea, and coffee are necessary. The patient, moreover, should be encouraged to discover some manœuvre by which the morbid fear may be overcome, but should not be forced to go into places that bring on the attacks.

The following is a brief account of my case:

M. H., a married woman, aged forty, was admitted into the Queen's Hospital on August 29th, complaining of an inability to walk in an open

space or in strange places, and also of depression of spirits. No history of nervous disease in the patient's family exists, as far as she knows. The patient has always been of a highly nervous temperament, but has never had an attack of the same kind before the present one. She has always had a good home and plenty of food. She has had nine children and one miscarriage. She suckled two of her children—one for twelve months, the other for a year and eight months. She attributes her illness to having so many children, and to over-suckling.

Nine years ago, while nursing a relative, and being in a very weak state of health, she was seized one day with a horrible dread and with shivering while going up stairs. A few months later, while walking out of doors, she had a fit of terrible fear and palpitation. Ever since she has been subject to these attacks. They begin suddenly and end suddenly, and are unattended with any confusion of mind or loss of consciousness. She cannot walk in an open space; she can walk out of her house for a few yards, and then is seized with an intense fear that she will never reach home again. She then turns and runs back, and can run better than she can walk, but cannot run in a straight line. If she carries a weight, such as two buckets of water, she can walk straight. She can also walk well in an entry and walks much better in a room where there are lines along the carpet, far better on a bare wooden floor, than where there is a plain carpet, for the lines assist her greatly. She can go across a ploughed field, but not across a meadow. A high wind will assist her. She never suffers from giddiness, but whenever she is seized with the fear she has violent palpitation.

While in the hospital it was found that she could not walk in a straight line even in the ward. She said that this was because it was a large room and strange to her, for she could get about her own house very well. On attempting to walk in the grounds of the hospital she could get along fairly well by the side of the wall, but if she got a yard or two from the wall she was very unsteady, and was seized with intense palpitation and fear. She was quite unable to walk straight out of the ward door and had to cling to the side and go by the wall. In returning to the ward she would quicken her pace and usually run in. A stick was a great help to her, but did not enable her to overcome her fear entirely.

Besides these attacks, which were invariably brought on when she tried to go out of doors, the patient was very nervous and subject to fits of depression and numbness in the hands and arms. The numbness would come on in bed, never in the daytime when she was up, and it never affected the legs. If strangers went into the ward, she said the bed seemed to sway, and she felt inclined to scream. She felt more comfortable with a screen near the bed. She also complained of shocks, and of going hot suddenly, and of throbbing all over her. The patient was somewhat anæmic and looked depressed. The thyroid gland was a little enlarged but soft; the pulse rate was accelerated during the attacks, averaging one hundred, but between the attacks it was normal. There was no loss of sensation anywhere, tactile, thermal, and painful impressions being normally perceived. The muscular sense was also normal. The pupils were equal, and responded normally to light and accommodation. The fundus oculi was healthy. The patient complained of seeing at times black spots and flashes of light before the eyes. There was slight deafness of nerve origin, but smell and taste were normal. The plantar, abdominal, and epigastric reflexes were present, the knee reflexes

were exaggerated, but there was no ankle clonus. There was no loss of power in the legs, the foot thrust being powerful, and no incoördination. Her memory for recent events was a little impaired, but the intellect was otherwise normal. The heart was a little enlarged and a soft systolic murmur was heard at the apex, but was not conducted into the axilla or elsewhere.

The patient had only been in the hospital about ten days when she insisted on going out, saying that she could not make herself comfortable in a strange place, and had never been able to do so since the commencement of her illness. During her stay in the hospital her temperature had been normal, and she had never had any hysterical seizures, or any of the ordinary symptoms of hysteria. She was decidedly of the neurotic and not of the hysteric type. Iron, salts, arsenic, and bromides were prescribed, but they did not in any way improve her condition.

I have lately received further information concerning this patient from Dr. Garman. He says that she is better, and had been to church since leaving the hospital, this being the first time for five years. She had recently been suffering from distressing irritability of the bladder, relieved by bromides. She had continued taking the iron and bromides, the prescription for which I gave her when she left the hospital.

The following case illustrates the opposite condition to agoraphobia, and is called claustrophobia, or a dread of shut spaces:

The patient, a lady about fifty-six years of age, suffers from attacks of fear and palpitation whenever she is shut in a railway carriage or a small room. She can travel by rail or go into a small room as long as the doors are not locked, and she has to bribe the guard to leave the door unlocked. I have observed her in two or three attacks. She cannot control them, and she suffers from intense fear and palpitation, with numbness of the hands and a sense of constriction in the wrists. These attacks occur if she goes out on a visit and has to occupy a small bedroom. She is better if she knows the door can be opened, and quite well in a large room. She is of a nervous temperament, has brought up a large family, and attributes her attacks to having had a large family, and to the worry incidental to the management of her grown-up sons. The attacks are purely mental, for she can be deceived into believing that the door of a carriage is unlocked, when the attack at once subsides.

Minor degrees of agoraphobia and allied fears are of common occurrence.

A young man, now under my care, suffering from dilated stomach with chronic spasm of the diaphragm and other muscles, cannot go into any place of public meeting, such as a church or theatre, without being obliged to leave. He feels choked, but has no fear, though he suffers from palpitation. This patient, getting into business troubles, became insane, and is now in an asylum.

Another patient dare not go to church, for, whenever he does, a feeling of nausea comes on and he is obliged to leave, or else he would vomit.

In both the above cases overwork and worry seem to have been the exciting causes. The sister of one of the patients suffered some years

ago from agoraphobia, from which she recovered after a few months' residence at the seaside.

The following are the conclusions I have arrived at from a study of many cases of mental derangement and morbid fears that have come under my notice:

That agoraphobia is a symptom only and not a disease in itself, its subjects being neurotic and often showing symptoms of nervous disturbance previous to its onset.

That it may be acute or chronic.

That it is the most important of the morbid fears, as it completely incapacitates its victims.

That any exhausting disease, habit, or occupation may be the exciting cause in people predisposed, such as neurotic subjects, or those suffering from neurasthenia, hereditary or acquired.

That the proper treatment is to discover and remove any faulty habit or depressing influence at work, and to prescribe a generous diet, cheerful society and surroundings, change of air, and nervine tonics, such as iron, strychnine, and arsenic with the bromides, the latter being prescribed with care and in small doses.

That attention should be paid to the dwelling-rooms, and that they should be as cheerful as possible.

That cases of neurasthenia should not be pooh-poohed, but should be carefully and systematically treated, as thereby much suffering and insanity may be prevented.

SHORTENING OF FEMUR FROM EPIPHYSIAL INFLAMMATION.

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THE study of the effect of local irritation or destruction of osseous tissue upon the subsequent growth of bone has, in late years, attracted much attention, and to Ollier, of Lyons, more than to any other surgeon, we are indebted for thorough experimental research and exact clinical data on this important subject.

Knowledge of this character is chiefly of prognostic value, and until these researches were available there was nothing of a positive nature upon which to base an opinion.

The great advantage of such exact pathological knowledge is appreciated when we undertake the study of an obscure bone case such as presented itself recently at the Orthopædic Clinic of Professor Willard,

through whose kindness, and the courtesy of Dr. Millikin, I now report it.

The case was that of a boy of eight years, whose right femur was two inches shorter than the left, and whose history, upon close study, presented several etiological factors of great interest.

There was no history of nervous disease or deformity, and the family history was good. Both parents are living and healthy, the patient being the second of four children, each of whom has developed soon after birth what was believed to be icterus neonatorum. The disease in this child began on the seventeenth day after birth with intense jaundice. Three days later a small abscess formed on the back of the left hand, followed shortly after by one in front of the elbow-joint which communicated with the articular cavity. Later, abscesses formed on the inner aspect of the right thigh, at the junction with the perineum, and two on the outer side of the trochanter. (It is uncertain whether these last communicated with the joint, but they present the appearance of post-articular abscesses.) The abscesses were opened, and a probe was passed into the elbow-joint. Extension was made of the right lower extremity, and three weeks later the child was well and has remained so since.

On examination, Jan. 13, 1890, the right lower extremity measured in length 33 inches, the left 35 inches; the right thigh 12 inches, the left thigh 14; the right leg 11 inches, left leg 11 inches. All the joints of the lower extremity are normal in anatomical construction and functions except the right hip-joint. About this joint there is some induration, and the great trochanter is one inch behind the Roser-Nelaton line; abduction, adduction, forced flexion, and extension are normal, the foot is in a normal position, and no grating within or about the articulation could be detected on the closest examination. There is a slight atrophy of one-half inch of the adductors. The circumferences of the calves are the same. In the left elbow-joint the olecranon is slightly luxated posteriorly, but motion in this joint is perfect.

In attempting to explain this shortening of the right lower extremity four conditions presented themselves as possible causes—(1) dislocation of the hip-joint, (2) acute arthritis (osteitis) of hip-joint, (3) pyæmic arthritis from icterus neonatorum, and (4) septic infection, accompanied by jaundice as a symptom, and pyæmic inflammation as of the epiphysis as a sequela.

(1) The shortening of the limb and the position of the trochanter behind the Roser-Nelaton line point to dislocation as a possible cause. Dislocation of the hip-joint may occur as a congenital condition, or be post-natal the result of trauma. The labor was natural, was not a breech presentation; the mother declares that the child was perfectly normal at birth, and the subsequent history and present condition exclude the possibility of its having been a luxation. The position of the trochanter also can be satisfactorily accounted for by partial separation of the epiphysis, the ligaments being affected and the head displaced, a condition pointed out recently by Townsend.[1]

[1] American Journal of the Medical Sciences, January, 1890, p. 6.

(2) Acute arthritis (osteitis) affecting the hip-joint would leave the parts in the condition found—the induration, shortening, position of the trochanter—and the abscesses point to such a lesion, but as a congenital lesion the literature on the subject, so far as accessible, does not contain a single authentic instance affecting this point, and Barwell[1] declares that nine months is the youngest age at which he has seen it. Certainly an acute arthritis of the hip-joint could not run its entire course in two or three weeks, as this did, and we may decide against acute arthritis.

(3) It is possible that it may have been a pyæmic arthritis resulting from the intensity of the icterus neonatorum. As pointed out by Ashby,[2] infantile jaundice begins on the second or third day as the result of late ligature of the cord, or patency of the ductus venosus, and is in most cases a mild affection disappearing at the close of the second week. In the severer forms of infantile jaundice in which it persists, and in jaundice in adults of the most intense character, I have been unable to find any authentic cases in which there were abscesses of the joints or large subcutaneous purulent collections as the result of the jaundice. So that, although this case might at first be considered one of icterus neonatorum occurring later than usual, and the intensity of which had resulted in pus formation, there is nothing to substantiate such an opinion. If the case were so considered, then the other cases occurring in the previous children could all be accounted for by the accepted theories of late ligature (all were attended by the same practitioner), or patency of the ductus venosus, and this case would then be considered as a more severe form of the affection, attended by abscesses and purulent arthritis.

(4) The last proposition was that it was septic infection of the newborn, accompanied by jaundice as a symptom, and epiphysial inflammation.

Until very recently, little was known of sepsis in the newborn.

Leube,[3] in 1878, recorded two cases, and Schützenberger and Wunderlich allude to similar cases, but it was not till 1888 that the condition was carefully defined, and an attempt was made to classify it by Dr. J. Lewis Smith.[4] His classification is briefly into (1) local sepsis; (2) general infection, "in which the septic poison probably entered the system through the umbilical vein," and (3) in which the sepsis "is received in other ways or other channels than at the umbilicus."[5]

In one of these cases (case iv., second series) abscesses occurred upon both legs, in the chest walls of the right mammary region, in and around

[1] Ashhurst's International Encyclopædia of Surgery, vol. iv. p. 349.
[2] London Medical Times and Gazette, April 25, 1885.
[3] Deutsche Archiv für klinische Medicin.
[4] Medical News, September 8, 1888, p. 256.
[5] Vide American System of Obstetrics, vol. ii. p. 724.

the metatarso-phalangeal articulation of one foot, and over both knee-joints; and at the autopsy about one ounce of pus escaped from the right knee-joint, and pus was also found in the joint of the great toe on one side. Smith considered that one of his cases was the victim of infection, with ordinary "suppurative bacteria," and with feces; and Flint[1] has pointed out that in the cases which recover (from pyæmia), the local effects consist chiefly of subcutaneous purulent collections and arthritic suppuration.

And here it would be profitable to distinguish in these infantile cases, as in adult cases, between those cases in which there are infectious emboli affecting the internal viscera, and those in which the *materies morbi* is some of the various forms of suppurative bacteria, in which the infection exhausts itself in superficial purulent collections and peri- and intra-arthritic suppuration, and from which cases sometimes recover.

The rule is established that abscesses occur in those cases in which thrombi cannot be demonstrated in the veins, and *vice versa*. And here a third form of septic infection might be alluded to in which septic emboli are absent, in those peculiar purulent synovitises which result from auto-absorption of morbid matters, as sequelæ of typhoid fever,[2] mumps, scarlatina, measles, empyema,[3] dysentery, gonorrhœa, and from suppression of the menstrual or leucorrhœal flow.[4]

In this case the condition was not one of septic arthritis resulting in destruction of the head of the bone, but in all probability the septic material localized itself at the diaphyso-epiphysial juncture, and by the virulence of the attack partially destroyed the cell activity of the cartilage, and resulted in the shortening observed. Ollier[5] puts the subject tersely when he says that an inflammation which brings about partial or complete destruction of the normal spongy layer, or even of the whole thickness of the cartilage by disintegration or by necrosis, will be followed by more or less marked arrest of its growth in length. As pointed out earlier by the same author,[6] the extremities of the long bones do not grow in length with equal rapidity, and the proximal end of the femur grows less than the distal extremity.

The growth in length of the upper end of the femur in this case was probably partially arrested, but the lower end has grown uninterruptedly, so that but two inches have been lost in these eight years of growth.

The jaundice which accompanied this case and was the first symptom

[1] Practice of Medicine, 4th edition, p. 87.

[2] Vide cases of epiphysitis from variola, quoted by Townsend, loc. cit.

[3] Transactions of the Pathological Society, London, 1881, vol. xxii. p. 1920.

[4] Ashhurst's International Encyclopædia of Surgery, vol. iv. p. 289.

[5] International Encyclopædia of Surgery, vol. vi. p. 881.

[6] Archives Générale de Médecine, tom. xii., 5e sèrie, p. 513, 1861.

observed, was probably due to the disorganization of the blood from the septic material. Epstein[1] has pointed out "that septic infection is an important cause of those alterations in the blood which give rise to icterus." Indeed, jaundice has been regarded by some authorities[2] as a very important and characteristic symptom of pyæmia. The jaundice is a symptom of the pyæmia, and not the pyæmia the result of the jaundice.

In conclusion, we believe all the children were probably infected with septic material through the umbilical vein, resulting in jaundice as a marked symptom, and that in this child the infection was more severe, resulting in purulent arthritis of the elbow-joint, abscesses, and partial destruction of the diaphyso-epiphysial cartilage of the right femur.

In recording this case the writer has only dwelt lightly upon the subject of epiphysitis or acute suppurative arthritis of infants, about which so much of value has been written of late, and the literature of which is readily accessible, and has recorded the case simply on account of the peculiar history and the shortening of the lower extremity which resulted.

222 South Sixteenth St.

A UNIQUE CASE OF VESICO-UTERO-VAGINAL FISTULA.

By Henry C. Coe, M.D.,
of new york.

At the October meeting of the Obstetric Section of the New York Academy of Medicine I reported a successful case of suprapubic amputation of the uterus for rupture during labor (*Medical Record*, November 2, 1889). The patient was shown at the Obstetrical Society two months later, being then in perfect health with a gain of thirty pounds since the operation. I stated in my original report that she had a cervico-vesico-vaginal fistula, due to an extension of the tear through the cervix into the bladder, and that for four weeks after the operation urine issued through the abdominal wound as well as per vaginam. During the fifth week the abdominal wound closed, and from that time all the urine escaped through the lower opening. The patient was able to attend to her household duties six or eight weeks after the operation, and has been in robust health, though much annoyed by the constant dribbling of urine, which, however, was normal and caused no excoriation of the vulva. I advised her to enter the Woman's Hospital for an operation, and she was admitted on March 7th.

[1] Sammlung klinische Vorträge, No. 80, 1880.

[2] Vide Bristowe in Reynolds's System of Medicine, vol. i. p. 345.

A careful examination showed a small opening with smooth, inverted edges, which was situated to the left of the portio vaginalis in the cicatrix resulting from the cervical laceration. The portio (the only part of the uterus which was left) was small, the lips everted and much eroded. A probe could be passed through the fistula into the bladder, but not into the cervical canal; however, I had no doubt that the two communicated, as was found subsequently on injecting the bladder with milk. I saw that the case was a complicated one, not so much because the cervix was involved, as because of the fact that the opening of the ureter must lie directly in the track of the sutures.

The operation was performed three days later, the patient being under ether an hour and three-quarters. I first divided the bridge of cicatricial tissue between the fistula and the remains of the cervical canal, thus forming one large opening. The edges of the fistula were pared and the entire portio vaginalis was then excised, so that nothing but vaginal mucous membrane would be included in the sutures along the entire line of the wound. It was necessary to dissect off a good deal of cicatricial tissue along the edges of the fistula proper, since in the healing process there had occurred an *inversion* of the vaginal mucosa, instead of the usual eversion of the vesical.

The opening of the ureter was next identified in the upper edge of the fistula and was carefully located by introducing a fine probe into it. Before passing the sutures (thirteen wire and three silk) tension was still further relieved by splitting the vesico-vaginal septum to the distance of a quarter of an inch along the upper edge of the fistula. The sutures were introduced in the usual manner with considerable difficulty, the bladder was irrigated with a weak solution of carbolic acid, and a soft rubber catheter was left *in situ*.

The patient recovered from ether rapidly, but about two hours after the operation had a severe rigor, followed by a rise of temperature to 104.5°, her pulse being 140 to 150 and very feeble. She complained of severe pain in the lumbar region, and, as only six or eight ounces of urine were secreted during the next eight hours, I feared that the ureter had been included in a suture. Quinine, infusion of digitalis, and stimulants were given, hot mustard poultices were applied to the loins, and the patient's condition rapidly improved. At 8 P. M. (nine hours after the operation) she was quite comfortable, the temperature having fallen to 101° and the pulse to 120. She had a good night, the kidneys acted well, and the next morning her pulse and temperature were normal. The urine was examined, with negative results. Convalescence was uninterrupted; some of the sutures were removed on the eighth day, and the remainder on the ninth, when she was allowed to pass her urine, which she did every four hours without pain. She was up and about the third week after the operation, and was discharged March 31st, the entire wound having healed perfectly. Two or three small nodules in the vaginal roof are all that remain to mark the site of the cervix uteri.

The points of interest in the case are:

1. The manner in which the lesion occurred—from the introduction of instruments through the undilated cervix, the head not having engaged.

2. The fact that repair took place so rapidly that not only did the

vesico-abdominal fistula close within three weeks, but at the end of two months the only apparent communication between the bladder and vagina was by a pinhole opening to the left of the cervix, through which all the urine was discharged.

3. The radical character of the operation, in which I was not content to pare the edges of the divided cervix in the usual manner, but excised the portio entirely, thus removing all that remained of the uterus. The difficulty of avoiding the ureteric opening was also worthy of note.

4. The chill and rise of temperature immediately following the operation. I have been unable to find any satisfactory explanation of the phenomenon, but was impressed at the time with its resemblance to urethral fever in the male. There was absolutely no malarial element in the case. In this connection it should be stated that though I sought for some evidence from which I might decide whether the left ureter was occluded or not, I could find no definite information on this subject in any of the authorities consulted.

A CASE OF ANTIPYRINE POISONING, WITH THE FORMATION OF MEMBRANES IN THE MOUTH AND SYMPTOMS OF LARYNGISMUS STRIDULUS.

By Julius L. Salinger, M.D.,
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The following case, illustrating the administration of antipyrine in small doses, with toxic effects of unusual occurrence, deserves to be recorded. The case is especially interesting, as the same symptoms occurred at three different periods following the taking of the antipyrine:

Mrs. W., æt. fifty-three, weight 212 pounds, very tall and of florid complexion; complained of pain in the loins in the region of the kidney. The pain was so severe as to make it impossible for her to lie on her back. The pulse was full and regular—about seventy-two in the minute. On cardiac examination no disease of the valves was found. The apex beat was full and bounding with a marked accentuation of the second sound. The examination of the urine gave the following result: sp. gr. 1026; reaction acid; color dark yellow; sugar none; albumin present; excess of urates. No tube-casts were found after repeated examinations under the microscope. There was no change in the amount of urine passed.

The patient had occasional periodic attacks of headache, unaccompanied by any gastric disturbance. The pain in the head was always in the frontal and parietal regions, and was very severe. A diagnosis of lithæmia with chronic contracted kidney was made. She was put on a

diet largely of fresh vegetables and milk, and all alcoholic and malt liquors were strictly prohibited. Drop doses of a one per cent. solution of trinitrin, pushed to its physiological effect, were ordered. The treatment seemed to improve the patient very much, and after two weeks she was able to lie on her back, and the pain in the region of the kidneys had entirely disappeared.

About this time the patient had an unusually severe attack of headache, and it occurred to me that the specific (?) for all headaches, especially of the lithæmic and gouty variety, antipyrine, was the indicated remedy. Accordingly, I prescribed five grains, to be taken every three hours, until the headache was relieved.

The first dose was taken about nine o'clock in the evening. Five minutes after taking the antipyrine the patient began to feel uneasy, complaining of flushes of heat, alternating with chilly sensations, principally along the spine, and in the face; the breathing became short and labored and almost immediately the lips and tongue began to swell. I was sent for in haste. On arriving I found the patient with lips swollen to almost three times their normal size; the tongue was already so swollen that it could be protruded only with the greatest difficulty. Her breathing was distressed, and very much resembled Cheyne-Stokes respiration. The pulse was quick, feeble, and irregular—about 160–168 in the minute. The temperature was 101.3°.

Spasmodic contractions of the muscles of the neck and face now commenced, but principally of the muscles of the larynx. The spasm was irregular in coming on, the intermission being from one to three minutes, and lasted about half a minute each time. During the spasm the patient would become blue in the face and would struggle for breath. Cold perspiration broke out all over the body. In the meantime the lips and tongue still continued to swell until the tongue became so swollen that it could no longer be contained in the mouth and protruded between the teeth.

I gave the patient a hypodermic of sulphate of morphine (gr. $\frac{1}{4}$) and sulphate of atropine (gr. $\frac{1}{150}$). The spasmodic contractions of the larynx decreased at once in both vigor and frequency, although there was still action of the muscles of the face and larynx for the next twelve hours—in fact, during the whole night. During these spasmodic contractions she lost control of the sphincters of the bladder and rectum, and urine and feces were voided involuntarily. On the following morning a reddish, elevated, erythematous eruption was noticed between the fingers and toes, in area at first no larger than a cent. There was no itching, the skin being covered with perspiration.

The patient lay in a comatose condition, being roused only with the greatest difficulty, immediately relapsing into her drowsy state when left undisturbed. The pupils were contracted to almost a pin-head in size. This contraction of the pupil could not be attributed to the hypodermic of morphine, for the pupil remained in this condition for the next six days.

There was no urine voided in the next twenty-four hours, so that it had to be drawn off with a catheter. Only about five ounces were obtained. The examination of the urine gave the following result: sp. gr. 1032; color dark red; reaction alkaline; albumin present in large amount; sugar none; sediment, urates in excess. There were no tube-casts present.

The eruption between the fingers and toes gradually became better defined and soon assumed the well-known appearance of urticaria. The eruption was also found in large blotches upon the face, neck and arms. It was evident that the eruption began to itch now, as the patient kept up an almost constant scratching.

The comatose state lasted about thirty-six hours. The patient could not talk after coming out of her stupor, probably on account of the swollen condition of her tongue (which was enormous), lips, and pharynx. The patient communicated her wishes in writing. On the third day a white false membrane began to form on the tongue, lips, and pharynx. It began by a deposit of white, round spots, which united with each other and formed a white membrane, very much resembling diphtheritic membrane. When the membrane was removed by tearing moderate bleeding set in with almost immediate reformation of the membrane. She complained very much of pain on deglutition, and it was with the greatest difficulty that she was able to take food.

The temperature ranged between 101½° and 103½°. The curious part about the temperature was, that it was always higher in the morning than in the evening, the lowest temperature usually being found between the hours of eight and twelve in the evening.

On the morning of the fourth day she began to spit up large quantities of phlegm. At first the expectoration consisted largely of mucus, but it soon changed to muco-pus, and on the fifth day large quantities of pus, tinged with blood, were ejected. From six to eight ounces were ejected during the next few days. The odor from this discharge was sickening, and all the windows and doors had to be kept open to obtain proper ventilation.

Looking into the mouth numerous abscesses varying in size, usually about as large as a chestnut, were seen in the gums, tonsils, and base of the tongue. I counted thirteen different abscesses. The pharynx and post-nasal space were very much inflamed.

The patient was in bed twenty-six days; when able to get up she was so weak that she had to be assisted in walking. She lost twenty-four pounds in weight. The fever disappeared gradually; there was less pus discharged, but the last symptom to disappear was the urticaria. Even after the last trace of urticaria itching of the skin persisted for some weeks.

She remained well for two months, gradually regaining strength. Another attack of severe headache came on, and the patient, not suspecting that the antipyrine was the cause of her last trouble, again took a five-grain powder, without my knowledge.

Precisely the same effect as with the first dose of antipyrine two months ago occurred. The flushes of heat and cold, with rapid pulse, and swelling of the lips and tongue, again occurred. The muscular contractions of the face and neck were not so marked this time.

The appearance of the urticaria was more marked than in the preceding attack. Prof. J. M. Da Costa saw her in this attack with me, and agreed that it was a case of antipyrine poisoning. The attack lasted sixteen days. The patient lost six pounds in weight. There was also in this attack an increase of albumin in the urine.

Three months later another attack took place, precisely similar to the preceding ones. This attack again followed the taking of antipyrine by

the patient for her headache. The symptoms were all milder, except the contractions of the muscles of the neck and larynx. These contractions had to be again controlled by administering a hypodermic of morphine and atropine. The eruption of urticaria between the fingers and toes was very marked. The patient was well again in ten days.

All the symptoms which this remarkable case exhibited have been noted before in instances of antipyrine poisoning, except the formation of the whitish-yellow membrane on the tongue, lips, and pharynx, and the multiple abscesses. To account for these would be a very difficult matter, except as a manifestation of sepsis. Urticaria has often been mentioned as occurring in cases of antipyrine poisoning, and it was this symptom more than any other which called my attention to the correct diagnosis of the case. The swelling of the lips and tongue is not a very usual symptom, still it has been noted in several instances.

Dr. Oscar Jennings, in the *Lancet*, 1888, reports a case of antipyrine poisoning characterized by swelling of the lips and tongue, so that for six hours his patient was in danger of suffocation. All of the other symptoms noticed in my case were present, except the formation of the membrane on the lips and tongue and the abscesses.

The patient whose case has just been narrated takes antifebrin, exalgin, and phenacetin with perfect freedom from attacks of the kind just described. In fact, phenacetin is the drug on which she now relies when her periodical headache occurs.

This case is certainly a warning against the indiscriminate use of antipyrine, especially by the laity. A drug which can produce such symptoms as those just enumerated is entirely too dangerous to be dispensed over the the counter by druggists and other unauthorized persons.

REVIEWS.

INJURIES AND DISEASES OF NERVES, AND THEIR SURGICAL TREATMENT. By ANTHONY A. BOWLBY, F.R.C.S., Surgical Registrar and Demonstrator of Practical Surgery and of Surgical Pathology at St. Bartholomew's Hospital, etc. 8vo., pp. xii., 510. Philadelphia: P. Blakiston Son & Co., 1890.

As house surgeon of St. Bartholomew's Hospital, and later as its surgical registrar, Mr. Bowlby has had during the past ten years ample surgical material at his command, and has paid careful attention to a branch of surgery which has not been attracting very much notice of late. As a recognition of the value of his studies upon the surgery of nerves he has been awarded two prizes: the Jacksonian Prize Essay of the Royal College of Surgeons in 1882, and the Astley Cooper Prize Essay in 1886; and he was invited to deliver a course of lectures at the Royal College of Surgeons in 1887. In the present volume the material upon which the essays and lectures were based has been brought together and added to, the more mature conclusions which come of wider experience have been formulated, and the result of the clinical work in its practical application to the surgical treatment of nerve injuries has been put before the profession. Mr. Bowlby has the power of presenting his facts and conclusions in an attractive manner, his style being pure, terse, and interesting; he is familiar with the literature as well as the clinical side of his subject, and his publishers have spared no expense in providing a well-printed and fully illustrated volume, the admirable figures adding greatly to the value of the text. The result is a book which should be in the library of every surgeon and of every neurologist, and should be consulted by all who desire to obtain information on the subject with which it deals.

Although in his preface the author says: "I have found the work of Dr. Weir Mitchell on *Injuries of the Nerves*, published in 1872, so full of accurate observation, and so complete in its realistic descriptions, that after the lapse of seventeen years there is but little of value to add to those parts of the subject he has made so peculiarly his own;" he has added very much, both to the clinical study and to the treatment of this branch of surgery, for much has been learned during this time which deserved to be brought into an accessible form.

The first part of the work includes chapters on the anatomy and physiology of nerves, on the changes in nerves after section, their degeneration and repair, their union by first intention (of which the author gives several cases, while admitting that it is rare for such union to occur), and on the trophic changes caused by nerve injuries. On the question of trophic nerves the author says:

"I think, therefore, that it may safely be assumed that nerves do exist which exert a direct trophic influence upon the tissues, and that the currents

which convey the same are constantly passing. The only question that remains to be considered is, whether the existence of special nerve fibres is necessary for the conveyance of trophic impulses, or whether the ordinary sensory and motor tracts suffice. It has been shown that there is nothing incongruous in the idea that any given nerve fibre can convey currents either centripetally or centrifugally, so that there is no ostensible reason why the nerves of motion and sensation should not be amply sufficient for the purpose. And considering that trophic disturbances very rarely, if ever, occur without some interference with the sensory and motor functions, there is a strong probability that the same fibres are capable of conveying the different impulses which are generated in the centres." (Page 60.)

He then takes up the symptoms of nerve injuries in general, and proceeds to discuss in the following chapter injuries of special nerves. Particular attention is paid to the exact distribution of the paralysis and to the deformity resulting; though, as the author shows, a satisfactory explanation of the malpositions is not easy; and to the areas of anæsthesia and partial anæsthesia produced in each case. It is unfortunate that illustrations of cases of injury of the nerves of the lower extremity should not have been included among the figures, for those showing the effects of division of the ulnar and median nerves are very satisfactory, and such figures tell more than verbal description.

In the discussion of injuries of the sympathetic nerve in the neck no reference is made to the valuable observations of Möbius—made in 1884—and it must be noticed that few of the references given by the author are very recent.

The chapters on the treatment of cases of nerve section and of nerve injury by primary and secondary suture are of the greatest interest. Mr. Bowlby has followed up his cases carefully and is impressed with the necessity of the operation of suture and with the very favorable results of this operation:

"Judging by accounts published by various authors, and by my own observations, I can have no doubt but that in the vast majority of untreated nerve wounds, either no union at all, or but a most imperfect one, can be expected." (Page 126.)

"I have no doubt—and I shall hope to adduce the proof—that the operation of nerve suture is absolutely harmless; that when the nerve ends are carefully sutured and maintained in apposition, a restoration of function is the most frequent result." (Page 127)

In primary suture he recommends the passage of the suture completely through the nerve trunk at right angles to its long axis, a quarter of an inch from the end, and in large trunks a second suture at right angles to the first. These should be drawn tight until the opposing surfaces are brought into contact, and if the trunk is a large one the sheath should also be stitched at the divided point. Catgut is used unless tension is great, when chromicized catgut is preferred. The limb is fixed in a splint in such a position as to keep the nerve at least tension. Twenty-seven cases of primary suture are described; fifteen successful, eight partially successful, four were failures. In two of these primary union occurred.

"If there is one fact more than another which stands out in the clinical histories of the patients who have been under my own observation, it is that, after failure of union by first intention, after trophic changes of many kinds, after complete atrophy and degeneration of the paralyzed muscles, recovery may yet be complete. Time is the great requisite in these cases." (Page 155.)

Cases are related of recovery after six months, and even after three years. Hence, the prognosis is favorable as to eventual recovery.

In secondary suture the bulbous extremity should be cut through close to the normal trunk, as at this point there are numerous young nerve fibres and the tough tissue gives a hold to the suture; the extreme end of the lower nerve should be cut off, but there can be no good done by cutting off successive sections in the hope that the cut surface may look healthy since the entire nerve is degenerated. These ends are to be united as in primary suture—the nerves being stretched somewhat if necessary. When they cannot be approximated sufficiently the upper end may be split and a part turned down by way of a graft or the transplantation of a portion of a nerve to fill the gap (as has been successfully done by Mr. Robson, of London, in one case) may be performed. The recommendation of the latter plan in preference to placing the ends in a tube of decalcified bone seems to rest on too slight a basis.

Some chapters are given to injuries of nerves without external wound, and it is recommended that when spontaneous recovery does not soon ensue the nerve be cut down upon, and if torn, the ends be united.

The complications of nerve injuries, such as neuritis, causalgia, glossy skin, etc., are fully detailed, but the author very rightly doubts the existence of myelitis as a sequel of nerve injury: "The actual lesion requires still the support of post-mortem evidence." In regard to the mechanism of reflex paralysis, he seems to be in doubt, though he admits that it may occur. To one who is somewhat incredulous as to the existence of this disease this chapter will not be satisfactory. In view of the prevailing tendency to regard so-called reflex paralysis as hysterical in character, and really a traumatic neurosis rather than a true spinal affection, the absence of all allusion to the recent French opinions is to be regretted.

The operations and indications for nerve-stretching and nerve-division receive due attention.

The chapter on multiple neuritis is hastily written and very incomplete. The book closes with a summary of what is known of neuroma.

The author deserves high commendation for the clear statements, careful observations, and painstaking research displayed throughout the volume. M. A. S.

A HANDBOOK OF DISEASES OF WOMEN, INCLUDING DISEASES OF THE BLADDER AND URETHRA. By DR. F. WINCKEL, Professor of Gynecology and Director of the Royal University Clinic for Women in Munich. AUTHORIZED TRANSLATION, edited by THEOPHILUS PARVIN, M.D., Professor of Obstetrics and Diseases of Women and Children in Jefferson Medical College, Philadelphia. Second edition, revised and enlarged, with 150 illustrations. 12mo., pp. 766. Philadelphia: P. Blakiston, Son & Co., 1889.

THIS second American edition of a standard work on the diseases of women does not differ materially from the first, except in the addition of a chapter on diseases of the bladder and urethra, which is based

upon Winckel's monograph upon that subject. The popularity of the work is shown by the rapidity with which the first edition was exhausted. There is, perhaps, no more scholarly or influential authority upon gynecological subjects among our German *confrères* than Winckel, and this fact, added to the respect and esteem in which his American editor is universally held, may serve to explain the early demand for a second edition in advance of a second German edition.

Amid the many merits of the work there are some statements with which we cannot altogether agree, though most of these are of minor importance. In respect to the use of silkworm-gut sutures, which it is said may be left *in situ* for weeks without disadvantage, we would beg to differ in opinion. We have found that they tend to become buried in the tissues and set up most annoying irritation. We can recall at least two cases in which the results were very mischievous, and hence believe that if such sutures are used at all, they should be removed at the earliest practicable moment.

In the light of present experience we believe that exaggerated importance is given by the author to the subject of uterine displacements. The work of Schultze in this direction receives unqualified approval from the author, and his theories are recommended. Without wishing to detract from the merits of Schultze's work, we think his classification is unnecessarily minute, his views as to the normally posed and anteriorly displaced uterus do not coincide with experience in this country, and his method of releasing the retroflexed and adherent uterus is one which we cannot consider as either easy of performance or free from danger.

Nothing is said of the great merit of Hodge in introducing the simplest and most efficient form of pessary which has ever been offered. Originality is denied to Sims in the introduction of the duck-bill speculum, which has done more toward facilitating the surgery of the vagina and uterus than any other single agency.

Some of the plates representing pathological conditions are lacking in clearness and definiteness. It is possible that they may have been reproduced from photographs, but even if this were so, the fact remains that they must be carefully studied in order to give one a correct idea of the existing relations. The best pictures are those which show at a glance the purpose for which they were intended, and there are such.

We cannot agree with the remark on page 365: "The fact that septicæmia is an uncommon complication of cancer of the womb will be understood when we remember that the infiltration of the adjoining tissues and the inflammation which follows tend to close the diseased tissue and thus form a barrier to the absorption of putrid material;" nor with that on page 367, that twenty-five per cent. of patients with cancer of the uterus die from peritonitis. If, as is remarked, also on page 367, forty-five per cent. of such patients die from uræmia, it would seem that there would be abundant opportunity for the absorption of septic material. Lancereaux pointed out several years ago that in all cases of advanced carcinoma uteri the kidneys were extensively diseased. This we have been enabled to verify in a considerable number of autopsies upon patients dying with this disease. It therefore seems to us that septicæmia must be looked upon as a very common concomitant of advanced cancerous disease of the uterus, and that this is chiefly owing to the imperfect functional power of the kidneys.

The chapters on disease of the Fallopian tubes are disproportionately

meagre, in view of the great volume of recent literature upon the subject. Very unfavorable opinions are expressed concerning the Battey-Hegar and Alexander operations, with which we cannot agree.

A novel feature is furnished by the chapters on diseases of the mammary gland. They are not generally discussed in works of this character, but we have always been of the opinion that their consideration was quite as appropriate as that of any other portion of the genital apparatus, of which they form an essential element. A. F. C.

INTERNATIONALER ATLAS SELTENER HAUTKRANKHEITEN. INTERNATIONAL ATLAS OF RARE SKIN DISEASES. ATLAS INTERNATIONAL DES MALADIES RARES DE LA PEAU. HERAUSGEBER-EDITORS-EDITEURS: P. G. UNNA, HAMBURG; MALCOLM MORRIS, LONDON; L. A. DUHRING, PHILADELPHIA; H. LELOIR, LILLE. [I.] Hamburg und Leipzig, Leopold Voss; London, H. K. Lewis; Paris, G. Masson, 1889.

ADVANCE sheets of the first number of this serial publication were shown to the members of the International Congress of Dermatology and Syphilography, which met in Paris during the month of August, 1889. The result was a promise of such support as to justify the prosecution of a work which must depend largely for its success on the favor of the dermatological experts of the world.

Of the three papers here presented, each by one of the corps of editors, not the least interesting and valuable is that which follows in order the other two, viz., by Leloir, on "Semi-sclerotic Lupus of the Tongue." The history is very briefly given of a young woman with typical tubercles of lupus vulgaris displayed upon and about the nose, lip, cheeks, palate, and elsewhere. The dorsal surface of the tongue is thickly set along the median raphé, with numerous, smooth, opalescent nodules of the sort elsewhere recognized upon the mucous surfaces. A history of syphilis is carefully excluded by record, and even by the "touch-stone" of specific treatment. Several distinct series of tuberculoses were then artificially induced by inoculating portions of the lupous nodules obtained from this patient in both rabbits and guinea-pigs. Upon a single sheet are here admirably represented, so as to be seen at a single glance, the typical facies of the patient with the classical nose, *en bec de perroquet;* the tongue of full size separately; as also the uvula, portion of the gum, and larynx; the tuberculous lung and spleen of a guinea-pig after inoculation; a tubercular nodule from the abdominal wall of another guinea-pig; and well-executed sections of the lingual tubercles, displaying giant cells in fibrous alveolæ, and characteristic tubercle bacilli stained after the method of Ehrlich. It would be certainly difficult to give in the same space a more concisely expressed clinical history, and a more graphic picture of the etiological relations of lupus and tuberculosis than are here presented to the reader.

Unna's paper, the second in order, is entitled "Ulerythema Acneiforme," and is illustrated by five photogravures, reproducing the gross portraiture, and four the microscopical appearances after section of the tissue in certain odd-looking patches of disease appearing in the cheeks

and on the ears of a young girl. The paper would scarcely be recognized as coming from the pen of this author if it had not an odd title and some suggestion of an unusual nomenclature. American readers and writers who attach definite meaning to their words, may be at a loss to understand whether or not the author is in earnest when talking of "inflammatory erythema," and *narbenerytheme* (cicatricial erythema); but we can make allowance for those who as yet have not joined the ranks of the increasing number who have agreed that, till the advances in all directions have set their feet on surer ground, they will not confuse the world further by new nomenclatures or fresh systems of classification. The author's differential diagnosis of his new disease from acne vulgaris is by no means in all points as complete as is required to insure the fullest acceptance of his views. His case is unquestionably one of marked interest, but by no means unique in the production of atrophy of the sebaceous glands without a precursory suppuration, and in the deeply pitted, so-called "worm-eaten" appearance. In point of fact, there is always an element of danger in publishing details of unique cases under new names, as a wide publicity tends sooner or later to such careful analyses of the facts which will insure their tabulation in recognized categories. But Unna is always interesting, if not exact; and though his sections are much less beautifully illustrated than those of Leloir, allowance must be made for the differences in the method of working the stone plate.

The first article, in order only, is a sketch of a case of lymphangioma circumscriptum, by Mr. Malcolm Morris, illustrated by the admirable colored lithographs reproduced from Mr. Hutchinson's plates. The author states that all the cases of this disease, Kobner's alone excepted, have been published by Englishmen, and is, therefore, probably not aware that before these words were penned Bryk had reported a similar case (in the *Archiv. f. klin. Chir.*); while Graham, of Canada, though an English citizen, had published the report of a similar case presented to the American Dermatological Association, illustrated by a wood-cut of the clinical appearances, the reading of which elicited the report of a similar case from the experience of Dr. Atkinson, of Baltimore.

The *International Atlas* is, in its typography and illustrations, a superb example of the best and latest accomplishments of the press; and deserves well of the educated class to which it appeals by the high quality of its scientific work. It is, perhaps, somewhat to be regretted that so much space should be given to a reproduction of each article in two languages besides that of the author, each paper appearing in both the English, French, and German text. To the larger number, by far, of those whom it will reach, certainly a reading knowledge of those tongues would render any one of these three an intelligent medium. But doubtless the editors carefully pondered their course before determining these details of their work. The system adopted will certainly commend itself to the French, many of whom are quite unfamiliar with another language than their own; while the Germans, who have uniformly shown themselves the most polyglottic of foreign physicians in international meetings, will scarcely need to avail themselves of the aid here furnished. The most delightful of the limitations thus imposed upon writers for these pages is the imperative necessity of brevity and conciseness. Every word of each contributor must be printed in triplicate. What an incentive, even from the low level of the purse, to tell

the truth only, and to tell it in the fewest words. If every English and American author had a French and German drag upon his plausible pen, how much good might follow.

The *International Atlas* is cordially commended to the profession in America for its value to the careful diagnostician. J. N. H.

CLINICAL LECTURES ON SOME OBSCURE DISEASES OF THE ABDOMEN. DELIVERED AT THE LONDON HOSPITAL BY SAMUEL FENWICK, M.D., Fellow of the Royal College of Physicians, Physician to the London Hospital. 8vo., pp. vi., 252. London: J. & A. Churchill, 1889.

THE affections treated of in these admirable lectures, are of great importance, and the obscurity which attends their diagnosis makes each case an object of special anxiety and individual study to the attending physician. For that reason all the information which can be obtained in relation to them is of value; and the rich experience of so competent an observer as Fenwick must be of peculiar interest.

Perforation of the appendix vermiformis cæci, stricture of the ileo-cæcal valve, fecal abscess, fecal abscess connected with the small intestine, perinephritic abscess, gastric and peri-gastric abscesses, tubercular peritonitis in the adult, cancer of the peritoneum, and hydatids of the peritoneum, are the subjects of the nine lectures here collected. Each of these subjects, says the author, marks some difficulty he had himself experienced or some mistake he had committed. The conclusions at which he has arrived are based chiefly on cases noted in the books of the London Hospital, but where the numbers of these seemed to be insufficient for the purpose, he has had recourse to observations recorded by others. In collecting his data, the post-mortem registers of the Hospital from 1839 to 1883 were thoroughly gone over and every case bearing upon the subjects above named carefully copied. The brilliant success of ovarian surgery has, in the author's opinion, led some to undervalue the ill effects likely to arise from operations upon the peritoneum, and thus to look upon the careful consideration of a case of abdominal tumor as unnecessary, under the idea that an exploratory incision will safely settle all doubts respecting it. Others, on the contrary, still view with undue timidity any operation on the abdomen, and are, in consequence, inclined to delay the adoption of measures, on the prompt execution of which the life of the patient may depend. To both classes Fenwick's studies will undoubtedly be, as he hopes, useful in assisting to define cases in which surgical procedures are most likely to prove beneficial.

The great attention paid of recent years in this country, to pathological processes affecting the appendix makes the lecture upon that subject seem somewhat behind the most recent state of professional opinion; and especially from a surgical point of view.

Concerning diagnosis, the chief points to be borne in mind are the suddenness of the attack of severe pain in a person previously in good health, more or less rapid supervention of peritonitis, increased tension and tenderness in the right iliac fossa and in the hypogastrium, dimin-

ished resonance on percussion, often attended by a gurgling noise, and in some cases the presence of a tumor in the pelvis, ascertained by an examination made by the rectum. Liability to mistaken diagnosis exists in cases of intussusception, but the pain in the latter is more colicky and intermittent, vomiting and constipation more severe, the tumor better defined, and there is almost always hemorrhage or passing of blood and mucus; while there is an absence of the tension and tenderness, of dulness and gurgle as in perforation of the appendix. Typhlitis differs from the ordinary cases of perforation of the appendix in its more gradual onset; in the comparatively trifling pain, tenderness, and constitutional disturbance; in the absence of frequent vomiting; and in the better definition of the tumor; but where perforation has taken place in an appendix situated close to or behind the cæcum, it may be impossible to distinguish between it and ulceration commencing in the cæcum itself. The latter, however, is very rare, except in phthisical subjects. Fenwick advises that whenever the tumor in a case of typhlitis is very slow in disappearing, we should suspect perforation of the appendix. There is a form of acute tubercular peritonitis which may be confounded with perforation of the appendix, the points of distinction being the more gradual onset of the disease, the more general pain and tenderness and general diffusion of the abdominal signs, the urgent diarrhœa, and in most cases some signs of pulmonary consolidation. The absence of tumor in the iliac region or in front of the rectum is the chief point. Two instances of hospital cases, one of inflammation of the connective tissue of the pelvis, the other of retro-uterine hæmatocele, are cited, in which a doubt might have arisen.

The author believes that if there is a reasonable suspicion of the presence of pus, it is proper that the site of the appendix should be explored by an incision. If the symptoms are not very urgent he believes that it will be found advisable to keep the bowels moderately open by mild aperients, to regulate the diet, and support the lower part of the abdomen with a well-fitting bandage. While not undervaluing the results of purely medicinal treatment in some apparently desperate cases, the reviewer believes that the recent experience of American surgeons indicates the value of operative interference either during the attack or after apparent recovery, in a certain proportion even of those cases of appendicitis in which abscess or perforation has not occurred. Most certainly is operation indicated in cases of recurring attacks.

Stricture of the ileo-cæcal valve is a rare affection and one quite difficult of diagnosis. The author details three cases observed by him, in all of which the movements of the small intestine were distinctly visible through the abdominal walls, and in 7 out of 16 cases which he has collected, particular mention is made of this circumstance. He agrees with Dr. Hilton Fagge that this is a sign of hypertrophy of the muscular coat, analogous to a corresponding hypertrophy of the cardiac muscle in cases of valvular obstruction.

The disease occurs most commonly in females between the ages of twenty and forty. The most prominent symptoms are the frequent attacks of colicky pain attended with severe constipation and vomiting. Of the three cases observed by the author, in none was the communication between the ileum and the cæcum completely closed. In the first there were two or three small openings. In the second a quill could be passed. In the third the valve admitted the point of the finger. There

was, therefore, nothing that was necessarily fatal; and he can only attribute their unfortunate terminations to the great and long-continued distention of the intestines, and the effects of this upon the nervous and vascular systems. In any future case of this kind, the author would advise, first, placing the patient on a milk diet and relieving the pain by sedatives. In case this treatment should fail it would be necessary to consider the advisability of operating to find the cause of the obstruction. Relief might be afforded by making an artificial opening in the small intestine near the cæcum. In view of the recent researches of Senn and others, the performance of the operation for lateral anastomosis seems to the reviewer to afford a better prospect.

One of the most important lectures is that upon gastric and peri-gastric abscesses. The author differs from the opinion of Leube that sudden symptoms pointing to suppuration are present in cases of gastric abscess, for in none of the cases which he has seen were there any symptoms pointing to any change in the condition of the patient that would lead to suspicion of abscess of such an important organ. In peri-gastric abscess, on the other hand, except where it occurs in persons affected with phthisis, cancer, or some other exhausting disease, the first formation of an abscess will be accompanied either by collapse and signs of general peritonitis or by sudden and severe pain of the epigastrium, attended with indications of local peritonitis. This article, as well as others, is illustrated with valuable diagrams showing the location of physical signs both in the affections discussed and in the diseases with which they might be confounded.

Space prevents further reference to the many instructive points contained in this valuable work. S. S. C.

INSOMNIA AND ITS THERAPEUTICS. By A. W. MACFARLANE, M.D., F.R.C.P. Edin., F.R.M.C.S. Lond., Examiner in Medical Jurisprudence in the University of Glasgow, etc. 8vo., pp. xv., 366. London: H. K. Lewis, 1890.

AMONG the numerous monographs upon insomnia this deserves to hold a very high place. It contains a careful and exhaustive review of what is known about sleep and its disturbance, and is particularly full and satisfactory in its therapeutic suggestions.

In the introductory chapter the physiology of sleep is discussed and the various theories offered as to the cause of sleep are mentioned. The author shows that changes in the cerebral circulation are usually attendant upon sleep, quoting the recent investigations of Mosso on this subject. But while admitting that the blood supply in the brain is diminished in slumber, and that slight anæmia of the brain is conducive to sleep, he thinks the cause of sleep is not to be found solely in the diminished cerebral vascular supply. He alludes to the removal of waste products from the brain in sleep, to the need of an increased oxygen supply to the brain for its recuperation from fatigue during slumber, and concludes that each of these factors may have an influence in the production of sleep, while no one of them can be accepted as settling the problem.

Going on to the subject of insomnia, the author discusses fully the conditions which produce sleeplessness, basing his statements upon a careful analysis of two hundred and seventy-three cases. He finds that neurasthenia, worry, gout, overwork, the menopause, dyspepsia, alcoholism, and senility are the most frequent causes, accounting for sixty-seven per cent. of the cases.

He very wisely says that insomnia is not a disease, but a symptom of many diseases, differing widely in their nature and complexity as well as gravity; and thus by attempting to reach the cause his treatment is directed to it rather than to the effect.

"The diseases enumerated as causes of active and passive congestion and anæmia of the brain, as well as the conditions giving rise to alterations in the vascular tension, etc., will, if carefully scanned, be seen to correspond, with wonderful exactness, to a list of the diseases which give rise to insomnia. It is not for a moment alleged that the list is by any means complete, or that insomnia depends solely upon these vascular derangements, brought about, in some cases, by the influence of the brain and nervous system; but these considerations go some way in the direction of a natural explanation of the causation of insomnia." (Page 48.)

After discussing the varying needs of sleep of people of different ages and various temperaments and modes of life, he says that, in his opinion—

"Quite a half of the cases popularly known as functional insomnia are due to an inherent instability in the cerebral textures which renders them vulnerable, and liable to be impressed unfavorably by circumstances incident to various stages of life; in short, prone to break down under the strain of the wear and tear of every-day life." (Page 63.)

He gives many valuable suggestions in a section (pp. 69–77) on the conditions favorable for sleep, and insists on the importance of (1) the quiescence of excitability and activity in the psychical centres; (2) the diminution and tranquillization of the cerebral blood supply; (3) the modification of the quality of the blood.

Each of the various causes of insomnia is then taken up in a chapter by itself, and much very admirable advice is given regarding the treatment of the affections of the nervous system producing insomnia. In fact, this section (pp. 78–136) constitutes an admirable monograph upon the treatment of nervous exhaustion, and alone suffices to commend the book to the general practitioner. The author happily avoids the danger —into which others who have written on this subject have run—of recommending medicinal treatment of sleeplessness indiscriminately; and while he gives full credit to the various hypnotics, especially to paraldehyde and sulphonal, bromides and chloral, he details many general therapeutic measures, such as food, massage, baths, douches, warm applications, exercise, and stimulants, which are often sufficient to combat the insomnia of nervous exhaustion without the aid of drugs. For those who need explicit direction formulæ are given.

The chapter which follows contains an interesting review of the effects of stimulants—especially of tea—in producing insomnia. Then follows a discussion of gastro-intestinal derangements as causes of sleeplessness. The author says:

"The analysis of insomnia from this cause is so intimately and inextricably associated with the whole question of digestion, that at the risk of appearing

to digress from the subject immediately under consideration, it is proposed to view some points bearing upon the physiology and pathology of the processes of digestion. This is the more called for when we reflect that it is only by unravelling the nature of the disorder, and by instituting a well-matured plan of treatment for its rectification, that the sleep disturbances—its symptoms—can be successfully alleviated. To attempt to deal with such cases by means of hypnotics and narcotics, the majority of which tend to derange the secretions, is worse than useless. It is to court failure and to aggravate the evil." (Page 188.)

The therapeutic suggestions regarding these diseases form a very valuable part of the book.

Then the sleeplessness observed in cardiac respiratory and general febrile diseases are considered. The last chapter deals with insomnia peculiar to females, and in an appendix hydrotherapy in insomnia is briefly summarized.

The book as a whole is a most valuable addition to therapeutic literature, being full of information upon many topics outside of its apparent subject and yet having a bearing upon it. It will prove a help to every practitioner to have it in his library. M. A. S.

MANUAL OF SKIN DISEASES, WITH SPECIAL REFERENCE TO DIAGNOSIS AND TREATMENT. FOR THE USE OF STUDENTS AND GENERAL PRACTITIONERS. By W. A. HARDAWAY, M.D., Professor of Skin Diseases in the Missouri Medical College, and in the St. Louis Post-Graduate School of Medicine, etc. 12mo., pp. viii., 434. St. Louis: Theo. F. Lange, 1890.

IN this handbook the author has succeeded in presenting the various diseases, especially as regards diagnosis and treatment, in a clear and intelligible manner, and stripped of all unnecessary and superfluous verbiage. As introductory matter symptomatology and general observations on etiology, diagnosis, and treatment are briefly referred to. The individual diseases follow, and are arranged in alphabetical order. While this plan of presenting the subject is not, strictly speaking, scientific, it has, for books of this size, certain evident advantages, and moreover probably has justification in the fact that constant changes are taking place in the classification of skin diseases from time to time. The directions as to treatment are understandingly given, this part of the text being almost as full as that found in the larger treatises. It embodies the suggestions of all the leading specialists, but contains throughout a strong vein of personal experience, which, when emanating from so careful an observer as Dr. Hardaway, is always valuable.

The author's work deserves better paper, better press-work and a more inviting general appearance than the publisher has given it. H. W. S.

FOOD IN HEALTH AND DISEASE. By I. BURNEY YEO, M.D., F.R.C.P., Professor of Clinical Therapeutics in King's College, London, and Physician to King's College Hospital. Philadelphia: Lea Brothers & Co., 1890.

THE subject of food in relation to health and disease is one of great complexity. In a scientific sense, comparatively little is known con-

cerning the intimate influence of food on the body. While it is true that a great diversity of food is in use by the various inhabitants of the globe, it must still be remembered that, on account of the universal likeness of the human constitution, there must be certain kinds of food which best subserve the aims and purposes of the highest form of civilization. No less than this is demanded by the law of utility. The Chinaman lives on his rice, the Esquimau on his blubber, and the Arabian on an exclusively nitrogenous animal diet; yet the Caucasian, who lives on a mixture of animal and vegetable food, has raised himself, physically, intellectually, and morally, far above his competitors. Other factors were unquestionably instrumental in bringing about the latter's exalted position, but it is enough for us to know that such a diet gives vigor, and a power of endurance which is unrivalled. If it is true that a certain system of feeding gives better results in health than any other, it is also true that the same principle applies in disease. Dr. Yeo believes this, and he has given us the evidence for this faith in the little volume before us. In it he discusses the nature, the origin, the purpose, the nutritive value of animal and vegetable food in all conditions of health, after which he gives the dietetic treatment of acute disease and convalescence, of disease of the digestive organs, of diabetes, of albuminuria, of gout, of consumption, etc., and ends up with a chapter on artificial digestive agents and on artificial feeding. The book is concise and practical, and is a most valuable addition to the list of our works on dietetics.

T. J. M.

On the Geographical Distribution of Some Tropical Diseases and Their Relation to Physical Phenomena. By R. W. Felkin, M.D., F.R.S.E., F.R.G.S., Lecturer on Diseases of the Tropics and Climatology, School of Medicine, Edinburgh. With sixteen maps, reprinted from the Proceedings of the Royal Society of Edinburgh. 8vo., pp. 54. Edinburgh and London: Young J. Pentland, 1890.

The diseases considered in this brochure are malarial diseases, dengue, Asiatic cholera, yellow fever, Oriental sore or boil, endemic hæmaturia, beri-beri, Oriental plague, dysentery, leprosy, yaws, fungus disease of India, elephantiasis Arabum, Guinea worm, filaria sanguinis hominis, scurvy, and tropical abscess of the liver.

The plan of the work includes first a brief description of the particular disease studied, and then detailed consideration of its geographical distribution and its relation to various physical phenomena believed to have a bearing upon its causation, area, and epidemic spread.

In regard to the data of the distribution of the maladies considered, the author is indebted for his principal facts to the *Handbook of Geographical and Historical Pathology*, by Dr. August Hirsch; but this information has been verified and supplemented by his own researches.

The maps, which have been carefully prepared, were obtained from various learned sources. A glance at these maps graphically shows the area of prevalence of the diseases spoken of, and their comparative virulence in different regions.

The industry of the author in their preparation is to be commended, and his work will doubtless afford valuable assistance in future studies.

S. S. C.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,
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Ether and Chloroform.

"Ether and Chloroform" is the title of a recent article by Dr. J. R. Comte, Surgeon of the Hôpital Cantonal of Geneva. This writer, it will be remembered, published, in 1882, in a thesis, a carefully compiled statistical list of all deaths under the anæsthetics recorded in medical literature up to that date. He is a believer in the superior safety of ether, and his article is a reply to one by Dr. Kappeler entitled "Chloroform *versus* Ether."

He prefaces his remarks by the statement that, in his opinion, an ideally perfect anæsthetic never will be found, meaning by that term one which intoxicates to the extent of prolonged unconsciousness and relaxation of the voluntary muscles, and does so with absolute safety. Since, then, *danger* is unavoidable in the administration of anæsthesia as it is performed *to-day*, the various elements which constitute that danger are subjected to a careful analysis for purposes of instruction. They are discussed in the following order: Clinical dangers in the process of administration of anæsthetic fumes; contraindications to the use of either or both of the agents of anæsthesia; dangers that may be inferred from a study of the author's mortuary statistics and the reports of autopsies, and, finally, inferences that may be drawn from experiments on animals made in physiological laboratories. From the consideration of these elements the following conclusions are made, and it is much to be regretted that the limits of this article do not permit us to follow the careful analysis by which they were reached by the author:

1. Anæsthesia can be obtained with ether as well as with chloroform, without using excessively large quantities or excluding atmospheric air.

2. The rapid method of forcing a cone holding twice the ordinary amount of ether down on the patient's face, so as to produce insensibility in two minutes, should be discarded, because it is intensely disagreeable, if not dangerous.

3. The inconveniences attending the use of these anæsthetics are about the same for both—that is to say, the disagreeable odor, the vomiting during the inhalation and afterward, the mental depression and malaise following the return to consciousness, etc.

4. The stage of excitement is neither longer nor more violent with ether than with chloroform; violent struggling should only occur in the intemperate. It is against ether that patients are at times excited and hilarious while regaining consciousness, and in some women hysterical manifestations come on at this time.

5. Contraindications to the use of ether are less numerous than chloroformists would have us believe. They may be narrowed down to the acute inflammatory affections of the respiratory tract, and all conditions of laryngeal and tracheal stenosis; it is also contraindicated whenever it is necessary to use the thermo-cautery on the head or its vicinity, or to operate in a small room near an open fire. The danger arising from the inflammability of the fumes may be materially decreased by certain precautions.

6. With these exceptions, ether deserves preference for all operations, particularly for dental surgery, the reduction of dislocations, and in all cases where anæsthesia must be maintained for a long time.

7. The method used by Kocher of producing insensibility with chloroform, and then giving ether for the rest of the time, has little to claim in its favor; for since one-half of the deaths under chloroform have occurred before anæsthesia was produced, only one-half of the danger of a fatal result is obviated by this procedure.

8. Ether is safer than chloroform. Although statistics do not furnish absolute proof of this, the presumption is so strong in its favor that it practically amounts to a certainty.

9. Supposing, for the moment, that deaths were equally common from the use of both drugs, ether should still be preferred, for the author's analysis of fatal cases shows that the serious nature of the operation, or the diseased condition of the victim as shown at autopsy, was usually sufficient to account for the mishap and relieve the surgeon, more or less, of his responsibility. His statistics also show the opposite to be the rule in the fatalities attributed to chloroform—that is to say, they frequently cannot be explained by the condition of the patient's previous health, the severity of the operation, or the result of the autopsy.

10. The breathing of the individual under ether should be continually watched, and although it is not necessary to pay the same degree of attention to the pulse, it is more or less dangerous to entrust etherization to any but a skilled physician. The chief danger of ether lies in too great confidence in its harmlessness.—*Revue Médicale de la Suisse Romande*, February 20, 1890.

On Deaths by Chloroform.

Dr. B. W. Richardson has recently published some observations on this subject in *The Asclepiad*, 1st quarter, 1890. He divides his subject for convenience into three heads: 1, comparative death by chloroform; 2, physiological or uncomplicated death by chloroform; 3, pathological death by chloroform.

In his first division he calls attention to the fact that in studying the fatal action of chloroform on animals, and then applying these results to mankind, inferences are apt to be drawn which are not applicable, because of essential differences existing between the subjects experimented upon and the human being. In the first place, in man the element of fear may play even a fatal part, as has often been shown. While an animal goes to sleep with the anæsthetic automatically—without a suspicion that it may never wake again—the very thought of dying under anæsthesia, of itself, whether expressed or concealed, involves serious risk to a human subject who has heard of the dangers it has to encounter, and firmly believes in them all. Fear may be the only explanation for many deaths where the wrist-pulse stops suddenly and the respiration soon afterward, before any of the usual phenomena of asphyxia have appeared. It also explains the frequent failure of artificial respiration in such cases; in animals it is almost always successful.

There are physical differences, too, as well as mental, which should be considered in applying the results of experiments on animals directly to the human race in its present civilization. To-day we have in our midst a large and ever-present group of individuals designated as the *morituri*—those who, from one cause or another, are in such proximity to death that they are at any moment ready to die from trifling external causes. This class does not exist among the animals, if we except those much reduced by old age, exhaustion, or starvation. Dr. Richardson says: "From the first week when chloroform was brought into practice unto the present hour I have read all available reports of deaths from chloroform. I had the privilege of assisting Snow in the collection of the data published in his posthumous work which I edited, and I am driven from this long and unique experience to the conclusion that, in many instances, death from chloroform in man has occurred amongst the *morituri*, and from conditions in which the physiological death by chloroform, as it is seen in the lower animals, has played no such commanding part as to lead to the conclusion that death occurred from uncomplicated asphyxia." Another physical difference is to be found in the condition of shock so frequently referred to by surgeons—a condition which the recent experiments have not shown to be producible in animals, and one which might well account for some of the deaths attributed to chloroform.

As to the second division of his paper, the physiological death of chloroformed animals, the writer expresses the belief that the immediate cause of death is not from the absorption of the vapor into the blood, but from the action of the absorbed vapor on the nervous system causing the subject spasmodically to cease to breathe; in other words, inducing apnœa, under which arrest of the heart's action soon follows. This view had already been expressed several years ago by Dr. Richardson.

In the third division, the pathological death by chloroform, the writer reiterates his classification published in 1870, in which he defines four modes of death by this agent in the human subject; namely, by syncopal apnœa, by epileptiform syncope, by paralysis of the heart and of the muscular system generally, and by chloroform combined with surgical shock. In the first variety breathing ceases, lividity, coldness, and insensibility follow, and the heart stops. This approaches quite closely to the physiological form of animals. The second class includes cases dying during the stage of excitement.

The third variety occurs after prolonged and gradual anæsthetizing; death is preceded by intermissions of the pulse, etc.; while in the last mode of dying surgical shock and chloroform combine to produce failure of the heart and syncope.

The Therapeutic Use of Camphoric Acid.

Since the publication of articles on this subject by Fürbringer and by Reichert, camphoric acid has been extensively introduced in the clinic of Professor Mosler, at the Royal University Hospital at Greifswald, and a report of the results obtained therewith forms the subject-matter of an interesting communication by Dr. Bernhardt Hartleib in a recent number of the *Wiener medicinische Presse* (Feb. 23, 1890). The action of this drug was studied in three classes of diseases; namely, in acute and chronic catarrhal affections of the respiratory mucous membrane, in acute and chronic cystitis, and in the night-sweats of phthisis.

In the first class of cases, ordinary sore throat (angina) and catarrhal pharyngitis, were much improved by using a one-half to one per cent. solution as a gargle. The patients noticed their own rapid improvement, and expressed their satisfaction with the treatment, yet it is doubtful if it really acted more promptly than other remedies. Fourteen cases of laryngitis, in which the solution was either sprayed on or applied with a brush, also furnished gratifying results. But the inhalations of the drug administered for chronic bronchitis or pulmonary tuberculosis were not as successful. Eighteen patients received this form of treatment, and no improvement in their physical condition could be claimed, although several declared that they were relieved of the feeling of weight in the chest, so that they breathed more easily. The strength of the solutions used for inhalation varied from one to four per cent. As camphoric acid is only soluble in water to the extent of nine-tenths of one per cent., alcohol, glycerine, and water made alkaline by the addition of bicarbonate of soda, were separately used as media to dissolve it.

Excellent results were obtained in the second class of cases, *i. e.*, cystitis. There were ten of these cases under treatment with camphoric acid, five acute and five chronic. Of the latter, three were reported well six weeks after all medication had been stopped, the fourth was unfortunately obliged to leave before it was prudent to do so, and the fifth, a very obstinate case of four years' duration, was at first much improved, but the treatment was changed, and ten days later he had a relapse. Of the five acute cases, four made a complete recovery before leaving the hospital, while the fifth, still having a slight trace of pus in the urine, left against advice.

In practice, the writer recommends washing out the bladder twice a day with a one-half of one per cent. solution, and leaving an ounce or two inside when the catheter is withdrawn. After the camphoric acid has been employed in this way for several weeks, the strength of the solution may be increased. Where pyelitis is present, as well as cystitis, the drug may be simultaneously administered by the mouth. If the bladder be very irritable, local treatment should be suspended and eight grains (one-half of a gramme) given by the mouth three times a day. For convenience in irrigating the bladder, Hartleib advises keeping a twenty per cent. solution of camphoric acid in alcohol;

three drachms of this in a pint of lukewarm water furnishes approximately the required one-half per cent. solution. Among the cases of cystitis was one of gonorrhœal origin; it was apparently cured.

In treating the third class of cases, the night-sweats of phthisis, the usual amount given was fifteen grains (one gramme) at bed-time, although in obstinate cases thirty grains (two grammes) may be required. Hartleib does not believe it necessary to give as much as Fürbringer had recommended. Thirteen patients of this class received treatment, twelve of them with the result of stopping the night-sweats; the thirteenth, a phthisical patient in the surgical wards, with extensive tubercular disease of bone, received the usual amount (fifteen grains) for several nights without producing any effect; a larger dose was not tried.

The disagreeable after-effects of camphoric acid were few. One patient, who had taken fifteen grains (one gramme) three times a day, complained of severe pain in the region of the kidneys, which disappeared on stopping all treatment. Two patients, whose bladders were frequently irrigated, developed a slight swelling of the glans, which soon subsided. One consumptive patient vomited a dose of thirty grains (two grammes) of the acid, but retained half that amount without difficulty. Continued use of it does not appear to affect the stomach or intestine, in fact its action in proper doses is quite harmless.

The Action of Olive Oil on the Secretion of Bile.

Although there is nothing very new in the administration of olive oil for the relief of biliary colic, the following abstract is inserted in the hope of shedding a little light on the obscure question of how it acts to relieve the pain and other symptoms of this distressing affection.

In an article which Dr. Seigfried Rosenberg read at a meeting of the Medical Society of Berlin, entitled "The Use of Olive Oil in the Treatment of Biliary Colic," the writer reports three cases successfully treated by this method. Including his own, he finds recorded in the medical journals twenty-one cases in which the oil treatment has been tried; in nineteen of these the patients were described as much relieved or well at the time of their discharge, while in two cases only no improvement resulted.

In considering the *modus operandi* of this remedy, he takes exception to the theory which assumes that the oil in some manner finds its way into the biliary passages, where it produces a softening of the gall-stones, thus facilitating their passage along the duct. He believes that the exhibition of a large amount of oil or fat in the stomach and duodenum excites a correspondingly large flow of bile, and that this flushing of the channels with bile dislodges the calculi and cures the colic. He argues that since bile plays so important a *rôle* in the absorption of fat, it is fair to assume that the presence of fatty food in some way calls forth the bile which is so necessary for its assimilation. In his endeavor to prove this he tried a number of experiments on two dogs with permanent biliary fistulæ, giving them in the morning a large dose of oil (sometimes a quarter of a pound of solid fat of ham or bacon was substituted by way of variety), and noting each hour the amount of bile which had flowed from the fistula. In every case he found a very considerable increase in the amount and duration of the flow over that produced by

an ordinary meal of carbohydrates and albuminoids. It was also considerably more than the secretion he could produce by giving salicylate of soda or bile itself, both of which he had previously regarded as active excitors of the biliary function. He concludes from his experiments that oil acts as a powerful cholagogue, perhaps the most active of any, and to this action he attributes his success in the treatment of gall-stones.

Dr. Rosenberg considers it very important to flavor and disguise the oil as much as possible, for the very idea of drinking a glass of it is extremely disgusting to patients. To remove the nauseous taste, he adds one-quarter of one per cent. of menthol and ten or fifteen per cent. of brandy; and also advises adding the yolks of two eggs, finely divided and worked in, so as to be perfectly smooth; this materially alters the appearance of the oil. The dose should be from five and a quarter to seven ounces (150 to 200 grammes); it is best to give about an ounce at a time, in such a way that the whole amount will be consumed in three hours.—*Therapeut. Monatshefte*, Dec. 1889.

Certain Uses of the Salicylate of Soda.

In a recent article, Prof. B. Stiller, of Budapest, calls the attention of the profession to some of the less well known therapeutic uses of the salicylate of soda. After referring to the remarkable advance which has been brought about by the use of this drug in the treatment of acute articular rheumatism, he claims that the smaller percentage of cardiac complications now seen is due to the more speedy relief of pain and the fall of temperature usually obtained. He then passes quickly over the well-known antipyretic, antineuralgic, and antiseptic properties of the drug, to dilate at some length on its usefulness in the treatment of diseases of the liver.

Professor Stiller's attention was first called to the cholagogic action of the salicylate of soda by some articles in English medical journals. Since then he has made use of this drug for the treatment of hepatic disease, and has obtained most brilliant results, especially in cases of impacted gall-stones. Details are given of two obstinate cases of that disease. Beside the administration four times a day of half a gramme (seven and a half grains) of salicylate of soda, given in soda water, the patients were ordered to stay in bed, have a light nutritious diet (for the first few days restricted to liquids), and to apply large flaxseed poultices to the abdomen. Morphine was occasionally given hypodermically, but only during the first two or three days of the treatment was there any indication for its employment. When the pain and vomiting had stopped, the patients soon regained their accustomed appetite, and were sent to Carlsbad or Vichy, to take a course of mineral waters and complete the cure.

The beneficial action in these cases, Professor Stiller considers due to the increased secretion of a rather thin and fluid bile, which, he says, has been demonstrated experimentally to occur in animals. Alkaline and saline spring-waters, especially the hot springs of Carlsbad, exert, he thinks, a similar action. Turpentine likewise increases the flow of bile. He considers the utility of administering olive oil to dissolve gall-stones as yet unproven; in his own practice he has refrained from giving it, owing to the large and nauseous dose, while, at the same time, the analgesic action of the salicyl compounds

has led him to give them the preference in cases of painful biliary colic. Cases do occur in which the salicylate of soda gives no relief. These patients, in his opinion, seldom improve without surgical aid. If the obstruction be in the hepatic or the cystic duct, instead of the common duct as is usually the case, an increased flow of bile in no way facilitates its removal. In more than one of his cases several gall-stones were discharged; these may be dislodged by the greater velocity of the current of bile passing over them, and the succeeding calculi may not cause pain, provided the duct be left sufficiently dilated after the passage of the first one.

In acute catarrhal jaundice, Stiller has not as yet given the salicylate of soda, but says he means to administer it in small and frequently repeated doses, hoping thus to avoid its irritating action on the gastric catarrh which usually accompanies and is frequently primary to the duodenitis.

Among other uses of the drug, he has found it a serviceable diuretic in cases of pleurisy with effusion. To produce diuresis he gives daily three or four grammes (forty-five to sixty grains) in divided doses at very frequent intervals. In cases of sciatica (not of long-standing) he has attributed marked benefit to its use; and recent peripheral paralyses of the facial nerve are frequently affected by the salicylate in a manner little short of the marvellous. — *Wiener medicin. Presse*, Nos. 1 and 2, 1890.

Chloralamide as a Hypnotic for the Insane.

"Of all the somnifacients discovered of late years," says Dr. S. A. K. Strahan, in *The Lancet* (February 15, 1890), "none is likely to prove a more certain sleep-producer, and, at the same time, be more innocent or otherwise agreeable, than chloralamide." Among the insane it has acted to induce sleep as certainly, if not as promptly, as chloral itself. It rarely failed to produce the desired effect, even in extreme maniacal excitement, and when it did fail it did not increase that excitement as other drugs have been found to do; on the contrary, it always calmed the patient more or less.

From thirty-five to fifty grains were usually sufficient to give from five to ten or more hours' refreshing sleep, and with fifty-five grains some effect was always obtained, even in the worst case of subacute mania or excitement following epileptic seizures. Patients were calm, and yet did not sleep heavily —that is to say, it was always easy to rouse them—and they usually declared themselves much refreshed on waking. In most cases sleep came on about an hour and a half after taking the medicine, although this interval varied from twenty minutes to three hours; two patients, however, were a little drowsy on the following day, and several, contrary to their custom, slept the next night without any medicine.

Chloralamide was not observed to affect the temperature, respiration, or pulse; in fact, the writer believes with Kuy, of Strassburg, that it acts precisely like chloral, only without any depressant effect on the heart. Headache, and the ataxic symptoms, sometimes seen after the use of sulphonal, were not noted; nor was any gastric trouble or loss of appetite attributed to its use. In fact, it is a very useful and safe hypnotic, equal but not superior in efficiency to paraldehyde; it is, however, pleasanter to take, and is free from the disadvantage of imparting any disagreeable odor to the breath.

The Clinical Use of Theobromine as a Diuretic.

Dr. Christian Gram, of Copenhagen, has published in the *Therapeutische Monatshefte* an account of his clinical experience with this drug, begun in the summer of 1887. In his earlier observations he used the pure theobromine, and, although the action was frequently tardy and uncertain, the results were in some cases good ones. He attributed this uncertainty of action to slow absorption, for the pure theobromine is almost insoluble, and after various trials of its other salts he selected the sodio-salicylate, and has used it exclusively in the later observations.

Eight selected cases are detailed in tabular form, so as to show the daily amount of urine, its specific gravity, the percentage of albumin, and the daily secretion of urea. All of them were suffering either from advanced cardiac disease or chronic nephritis, and in most of them sphygmographic and sphygmomanometric records were also kept. The results show, it is claimed, that the pure theobromine is absorbed with difficulty; that when absorbed it is a powerful diuretic; that it affects the kidneys directly, and not through the medium of the heart and circulation; that the sodio-salicylate of theobromine is readily absorbed, and is likewise an active diuretic. It appears to be harmless; only once was any unpleasant after-effect imputed to it—a slight feeling of faintness. The usual daily dose was a drachm and a half, or fifteen grains, every four hours. The writer considers that the diuretic action was proved beyond question in all his cases, except those where either the medicine was not absorbed, or where the renal epithelium was so extensively degenerated that it was impossible for it to secrete any longer.—*Therapeutische Monatshefte*, January, 1890.

The So-called Double-cyanide of Zinc and Mercury.

As our readers already know, a new, stable and but slightly soluble antiseptic was introduced by Sir Joseph Lister last November—to wit, a double compound of cyanide of mercury and cyanide of zinc, obtained by adding a soluble zinc salt to a solution of the cyanide of mercury and of potash. It is considered an excellent material to add to gauze for antiseptic dressings, and has been popularly known under the name of "the double-cyanide of zinc and mercury." This popular name is, in all probability, an incorrect one, for in a recent report of experiments conducted in the Laboratory of the Pharmaceutical Society, Professor Danstan and Mr. Block (who performed these experiments solely to find out if a double-salt was present) assert that no such double-cyanide of zinc and mercury can be formed; that in the new gauze the simple soluble cyanide of mercury is present in considerable quantity (perhaps all the mercury is in that form), but is prevented from dissolving by the mechanical presence of the precipitate of the zinc salt, and that probably all the mercuric cyanide may be removed by using a sufficiently large excess of water. In the discussion which followed the reading of this paper, Lister said that these experiments had a very important practical bearing—namely, that manufacturers and others making the new gauze must be very careful to follow his directions, and not use a larger amount of water than he had specified, both for the impregnating solution and also for the

starching, as otherwise a gauze would be produced deficient, if not almost free, from the cyanide of mercury.—*Lancet*, February 22, 1890.

Strophanthine and Ouabaine.

At a recent meeting of the Académie de Médecine, Dr. Panas made some remarks upon these new local anæsthetics. Ever since the discovery of the remarkable local action of the salts of cocaine, he said, chemists have been trying to obtain similar effects from other organic compounds. The hydrochlorate of erythrophlein was believed to be a local anæsthetic in the eye, but its action is slow and unreliable, and it is apt to set up a conjunctivitis; other substances have given no better results. The latest which have been tried, ouabaïne and strophanthine, are said, in weak aqueous solution, to produce complete and prolonged anæsthesia in the conjunctiva and cornea of animals, with a slight contraction of the pupil, followed by dilatation. Dr. Panas has introduced these drugs into the eyes of rabbits and men, and concludes that ouabaïne, although a good local anæsthetic for the rabbit, does not produce this effect in mankind, while strophanthine, although a fairly good anæsthetic, is too irritating a substance to use in preference to cocaine, which is, in fact, still without a rival.—*La Semaine Médicale*, February 19, 1890.

Annidaline, a Substitute for Iodoform.

This new substance, which has been brought forward by Messinger and Nortmann as a substitute for iodoform, is probably a combination of two molecules of thymol with three atoms of iodine—in other words, a triïodide of dithymol, whereas aristol is a diïodide of dithymol. It is a reddish-brown powder, which may be kept for several months, at least with proper care. It is decomposed by the action of light and moisture, giving off iodine and turning yellow. It is insoluble in water, slightly soluble in alcohol, readily so in chloroform and ether.—*Journal de Médecine de Paris*, February 8, 1890.

MEDICINE.

UNDER THE CHARGE OF

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Influenza.

The journals are still full of this subject, bringing forward somewhat that is new, and much that is confirmatory of what has been already recently written regarding it.

STRÜMPELL (*Münch. med. Wochenschr.*, 1890, No. 6, 90) calls attention to the differences which exist in the symptoms of the affection as seen at different places, and to the importance of exact descriptions of any local peculiarities witnessed. In the author's experience the symptoms of the disease have shown a remarkable similarity to those attributed to the cases in the epidemic of 1830–32. As to the existence of a specific cause of the affection, and the nature of this, we are still in doubt; and only the discovery of it will clear up the diagnosis in many instances. Many cases of simple catarrhal inflammation, of herpetic fever, and the like cannot be distinguished from it.

The multiform nature of the disease is characteristic, and permits the divisions of the symptoms into different classes. It must be borne in mind, however, that transitional forms exist.

I. First among the typical varieties may be mentioned the Typhoid form, in which the general symptoms predominate—such as fever, languor, pain in the joints, depression, headache, loss of appetite—while the local symptoms are absent or slight. The general appearance of the disease may be so severe in this form that the resemblance to typhoid fever is great. The sudden beginning is, however, characteristic of influenza, as are the severe lumbar and sacral pains. A pressing pain in the eyes is a very common symptom in influenza. Severe headache and nose-bleed are common in both affections. Strümpell has almost never detected an enlargement of the spleen in influenza, and delirium was rare.

II. The second form is the Catarrhal, with especial involvement of the respiratory apparatus, and with more or less of the general symptoms. The greatest number of cases belonged to this category. Not seldom there was a barking cough, reminding one of that of measles. Sometimes the finer bronchial tubes were the only part attacked; in other cases coryza or hoarseness were noticed, while the lungs were entirely uninvolved. Injection of the conjunctiva may be present, but well-marked conjunctivitis was rare in his experience.

III. The Catarrhal form, with especial implication of the digestive system. Of this the author saw but comparatively little, the commonest being the combination of angina with the general symptoms. Only exceptionally did he observe severe and persistent gastric and intestinal disturbances. Vomiting was frequent, but is rather to be considered one of the general symptoms.

IV. The Rheumatoid form includes those cases in which the most violent pain in the neck, lumbar, and sacral regions and in the extremities are almost the exclusive symptoms. The pains appeared to be sometimes in the nerve-trunks, oftener in the muscles. Sometimes they were so severe that the patients continually and loudly complained of them, and could not tell in what position to lie. Evident paresis was present in the painful region in some instances.

These forms scarcely ever exist in their purity, and some evidence of catarrhal affection of the respiratory apparatus and of muscular pain is almost always present. Influenza is very apt to relapse, and in this case a different form may be present in the second attack from that seen in the first.

The author observed the very sudden commencement of the disease in very few instances. As a rule, some days were required before the full violence of the affection was developed. Not infrequently there were some prodromal

symptoms, consisting generally of evidences of fever, violent headache, general weakness, and pain in the lumbar and sacral regions. Later the other symptoms of the disease appeared. The comparison of a large number of temperature-curves showed the following principal forms: 1. In the mild cases a slight, irregular fever with an evening rise, lasting a half to one week. 2. In the severer cases a temperature at first rising rapidly to about 104° F., remaining at this one to two days, diminishing for several days, so that there was but little fever or none, then going up again for several days, and rapidly sinking to normal and remaining there. 3. A curve which remains high from the beginning for four or five days, and then falls by crisis. This curve appears in the cases with severe general symptoms, especially if attended by diseases of the lungs. It is difficult to distinguish these cases from genuine pneumonia. 4. The most persistent fever was seen in the cases in which widespread lobular pneumonia or pleuritis developed. Here the temperature-curve resembled the typhoid fever curve, lasting three to four weeks, and ending by lysis.

Prominent among the complications is pneumonia, which Strümpell regards as in most cases not due to the original germ of influenza, but as a combination of the two diseases—an instance of mixed infection. The complicating pneumonia was usually, in his experience, diffuse, lobular, catarrhal, affecting the lower part of one or both lungs. The expectoration was generally mucopurulent. Often there was no evidence of pulmonary consolidation. The development of a large pleural effusion was a not uncommon complication in the author's cases. In two instances nephritis occurred. The author believes this analogous to the development of nephritis in the other infectious diseases.

Recovery was quite slow even in the entirely uncomplicated cases, as the patients often for weeks complained of weakness which they could not overcome. Relapses were frequent. The treatment was purely symptomatic. Death occurred in two cases; in neither of them from the disease itself.

DUFLOCQ (*Rev. de Méd.*, February, 1890) divides influenza into three forms, of each of which he reports instances in detail:

I. The Nervous form. This variety was in his experience much the most frequent, but at the same time the least grave. In some of these cases there was pain in the head of varying character and intensity; in others lumbar pain was much the most prominent symptom. In some cases there were fever and chilliness, or attacks of syncope, or excessive weakness.

II. The Thoracic form became more and more prominent in Paris as the epidemic advanced. It may be divided into several classes:

A. The Respiratory form, including—1. Those in which coryza and conjunctival irritation mark the onset of the disease. 2. Those in which involvement of the larynx is the earliest symptom, or in which hoarseness develops as the fever and pain are disappearing. In other instances the symptoms of œdema of the glottis appear. 3. The numerous instances in which tracheitis or a common cold develops. 4. The very frequent cases in which bronchitis exists, usually of slight degree. 5. Those in which very marked dyspnœa accompanies moderate bronchitis. 6. Those complicated by pleuro-pulmonary congestion, and being among the grave cases of grippe. The symptoms of this congestion in grippe are the same as those seen apart from it. It may arise in the course of the influenza or during the convalescence; and may be

double or only on one side. It is peculiarly insidious in its onset, and in some cases only repeated and careful examination reveals a small patch of congestion. Often there is but little cough, and the expectoration is absent or not characteristic. The râles are not like those of ordinary pneumonia, being even more fine, dry, and superficial, and often only evident on coughing. The presence of some impairment of resonance shows that it is not bronchitis; the diminution of vocal fremitus, that the condition is not pneumonia; and the presence of fine râles, that it is not pleurisy with effusion. 7. The cases in which actual pneumonia develops. These are instances of a mixed infection with two species of microbes. The existence of the influenza predisposes to the development of the pneumonia. This latter has certain special characters. It is often insidious in its onset and has but little pain in the side, and an absence of characteristic expectoration.

B. The Cardiac form. Instances of this were not frequent in the author's experience. There are several varieties of it. 1. In the first there is an acceleration of the pulse from the beginning of the disease. In cases of the nervous form there is often a rapid pulse, even after the fever has diminished. 2. There may be cases exhibiting a pseudo-angina pectoris, and the author reports an instance of this sort. 3. When grippe is complicated by pulmonary conditions there may be evidences of great cardiac weakness appearing.

III. The Gastro-intestinal form. 1. It is not uncommon to see instances of the nervous variety exhibiting intense headache and yet with good appetite, perfect digestion, and clean tongue. 2. In other cases nausea and vomiting occur at the onset of the disease, and appear to be connected with the nervous system. 3. In a third group there is in addition a loss of appetite and a condition of coated tongue removed by the administration of a purgative. 4. In other instances the digestive disturbance is more severe, and the anorexia remains five or six days after the disappearance of the acute symptoms. 5. There are certain patients who suffered with prodromal symptoms, consisting of headache, nausea, vomiting, progressive loss of appetite, restless sleep, dreaming, general feebleness, accompanied often by vertigo, fever, epistaxis. The diagnosis is not always easy between grippe and typhoid fever. 6. Sometimes the symptoms are still more pronounced, and there is blood in the stools, persistent diarrhœa, evident emaciation, and very tardy return of appetitite. 7. The author has seen one instance of vomiting and diarrhœa so severe that the attack might be called choleraiform.

Eruptions: He has observed two instances of a scarlatinal eruption in influenza and one of a morbilliform rash. Other cases showing similar eruptions have been reported to him.

As regards the course and termination, the affection may last but one or two days, but the convalescence even then is not complete for from four to eight days, the patient remaining weak with lumbar pain, susceptible to cold, and liable to develop respiratory affections. Simple grippe is usually benign, but pulmonary complications are apt to develop at about the fourteenth to sixteenth day, after the patient has been out of the house.

Comparisons of the health statistics of Paris for the first week of the years 1889 and 1890, respectively, show that the number of cases of pulmonary disorders was greatly in excess in the latter year.

There is no doubt that the disease is of an infectious nature, but the method of its propagation is a disputed point. The author believes that the air is certainly the means of transporting the still unknown germ. He relates the history of its mode of propagation in a certain village, as well as several other instances which appear to prove that it is communicated from person to person. This communication may be by means of furniture or clothing. He takes the view that the external air carries the infectious elements into a certain locality, and that those first taken sick then appear to become centres for the spread of the disease. It is therefore both epidemic and contagious.

According to a report appearing in *Le Mercredi Medical*, January 29, 1890, Gorecki has observed amblyopia, weakness or spasm of the accommodation, and paralysis of convergence in influenza; Parinaud has seen ophthalmic migraine; Valude paralysis of the external muscles; Gillet various subjective disorders of the eye; Adler has seen keratitis of a special form, iritis, and glaucoma; Reynier, Dreyfuss, and Schwabach have observed otitis with varying frequency, and Gottschalk four cases of metrorrhagia brought on by the onset of influenza. Two of these latter were accompanied by dysuria also.

BOUCHARD (*Le Mercredi Medical*, January 29, 1890), writing on the "Contagion of Grippe and its Complications," says that he had previously expressed the belief that the grippe was not contagious. He has, however, had cases reported to him which would appear to prove that it spread from person to person in a city by direct contagion. These facts are not in accord with what we know of the suddenness of its dissemination, and of the influence of meteorological conditions upon it. He does not believe that there is any specific microörganism the cause of the disease, as he has found three different species present in it. His opinion is that some one of the ordinary microbes—different in different cases—acting upon a person whose organism has lost the power of resistance, becomes pathogenic and produces the disorder. He is still in doubt, therefore, whether the affection is contagious or even infectious.

DUPONCHEL (*Ibid.*), in speaking of the "pneumonia of influenza" ("*pneumonie grippale*"), expresses the view that it is not a concomitant attack of pneumonia independent of influenza, but that it is one of the numerous manifestations of the latter disease. He bases this opinion on the fact that, though the physical signs in three cases observed by him were the same as those seen in ordinary acute pneumonia, the expectoration was not rusty, but liquid, mucous, and more like that of a bronchitis. There had been pain in the side without initial chill. The course was not like that of ordinary pneumonia, but in successive exacerbations, more like that of bronchopneumonia. The duration was about three weeks, the decline gradual and accompanied by abundant perspirations, various nervous troubles, and extreme languor. No encapsuled diplococci could be found in the sputum.

VAILLARD (*Ibid.*) presents the following *résumé* of the results of his bacteriological studies on influenza.

1. In those who died of grippe a streptococcus was found in the blood, spleen, lungs, or liquid effusions. Three times in four this microbe was entirely alone; in one case the staphylococcus was also present.

2. In empyema consecutive to influenza the streptococcus was the only one present.

3. The same streptococcus was constantly present in the expectoration of persons suffering from grippe. As a result of this constancy, one is induced to believe that the microörganism plays an important *rôle* in the pathogeny of the affections occurring during influenza. Whether or not it is the cause of the disease itself, cannot yet be determined.

Psychoses after Influenza.

Kraepelin (*Deutsche med. Wochenschr.*, March 13, 1890) reports a series of eleven cases in which various psychoses developed after influenza had run its course. The immediate cause appeared to be rather the general weakness of the organism, though it is possible that the long period of depression seen in the disease is due to the continuing action of the poison, and that this may be etiologically connected with the mental disturbance. Three groups of the psychoses were evident. The first contained the cases of simple psychic depression, shading off into melancholia, or with a hypochondriacal tendency. Another case, nearly allied to this group, exhibited delusional ideas in addition to melancholia—what might be called a depressive delusional insanity. Cases of the group are entirely analogous to those which occur after long continuous infectious diseases, after articular rheumatism, whooping-cough, and typhoid fever.

The second group of cases, as observed by him, resembled more those psychoses occurring after pneumonia and the acute exanthemata, and in the puerperium. They may be considered acute conditions of exhaustion, "collapse delirium," consisting of a rapidly developing confused excited condition, with numerous illusions.

In one of these cases the condition was more severe, reaching a protracted state of asthenic delirium, a hallucinatory confusional insanity. Another of the cases of this group exhibited typical mania, with a well-developed condition of depression, and with a course much longer than in collapse delirium.

A review of the cases so far discussed shows that in none of them did the bodily disease appear to be the only cause of the mental disorder. In all there existed certain other factors which either produced a certain predisposition, a diminution of the mental and bodily power of resistance, or, *vice versâ*, gave the last needed impulse to the production of a psychosis in the person already predisposed by the occurrence of influenza.

The first condition was the commonest in the author's observation. Under this heading the author enumerates preëxisting anæmia, pulmonary, gastric, and cardiac affections.

The second condition was illustrated by the occurrence of erysipelas, the puerperium, and great excitement immediately after the recovery from influenza.

It would, therefore, appear that influenza alone is not sufficient to occasion development of a psychosis. And, as cases show that influenza often only gave the last needed impulse to this development, it follows that the form of psychic disturbance is not greatly dependent upon influenza. This was especially true of the third grade of cases, in which the absence of dependence

was very plainly manifest. In one of these, for example, there developed a typical delirium tremens in a man who had been addicted to alcoholic excess.

The treatment of the psychoses after influenza is, naturally, chiefly of a tonic sort. Rest in bed is to be enjoined, combined with prolonged bathing or packing. To procure sleep, the bromide preparations may be employed in moderate doses, or sulphonal, or hyoscin in bad cases. Abundant nourishment is indicated; stimulants if collapse is feared. In this way, most cases will be aided to recovery, unless fatal collapse occurs.

A Contribution to the Curative Action of Erysipelas in Malignant Tumors.

Kleeblatt (*Münch. med. Wochensch.*, February 18, 1890) refers to the fact that the therapy of malignant growths is still of but little avail in spite of the progress made in their surgical treatment. It has also been repeatedly observed that an intercurrent attack of erysipelas has produced the diminution in size or even the disappearance of such growths. The question has, therefore, been raised and variously answered as to the justifiability of artificially producing erysipelas in desperate cases. Ricord and Depres, in France, were the first to carry this procedure into execution; and Busch, in Germany, did the same with astonishing results. Fehleisen having succeeded in obtaining pure cultures of the cocci, material for producing the disease was always at hand. He reported seven cases in which inoculation had been performed. Kleeblatt reports in detail three interesting cases of malignant growths in which he employed inoculation with the cultures of Fehleisen's coccus. The first was that of a man of fifty-four years, suffering from lympho-sarcoma of the left tonsil with enlargement of the neighboring lymphatic glands. The tonsil was removed by operative interference, and the glands scraped or taken out. The patient did well after the operation for a time, but the growth then returned in the same situation, as also in the other tonsil and in numerous glands. Fowler's solution was given by injection, and as a result several abscesses formed, from one of which an attack of erysipelas started. The result of this attack was a notable diminution in the size of the different tumors and a great improvement in the condition of the patient. After a time the disease began again to increase, and the author inoculated the patient with Fehleisen's coccus The attack of erysipelas which was the result of this produced a great diminution of some of the growths and a total disappearance of others. Nevertheless a renewed development of the growths occurred in a short time, and was followed by the death of the patient.

A second case suffered from lympho-sarcoma of the nasal cavity, and a tumor extending from the mastoid process to the angle of the lower jaw. Inoculation with erysipelas was performed in this case too, and was followed by a complete and what appeared to be a permanent disappearance of the disease.

A third case, a patient with a small lymphadenoma, developed erysipelas twice spontaneously. The first attack was followed by a diminution in the size of the growth, and the second by its total disappearance.

The author believes that the cocci penetrate the tumor, multiply there, and produce destruction of the cells of the growth by a direct action on them.

Or, if it is true that a special microbe is the cause of the development of carcinoma or of sarcoma, then the cocci of erysipelas must wage war directly with them, destroying them, and bringing about the death of the cells secondarily. He believes, too, that the salutary effect of the erysipelas depends not on its local action alone. The high and often long-continued fever tends to bring about a fatty degeneration of the cells. In other febrile diseases, as typhoid and scarlet fevers, and in cholera, the disappearance of sarcomata, lymphomata, and adenomata has been observed.

Acromegalia.

Another case of acromegalia is reported by Péchardre (*Rev. de Méd.*, February, 1890). The patient, a woman of forty-two years, was without family history bearing upon the development of the affection. There was likewise nothing abnormal to note in her previous history, except the occurrence of rheumatism, limited to one shoulder, and probably phlebitis of the left leg. She had always had a small goitre, as had one of her sisters.

Seven years before seen she suffered from sudden suppression of menstruation, accompanied by abdominal and lumbar pain. The pain disappeared after some weeks, but she never menstruated afterward. In the course of about six months she began to experience general langour and dyspeptic phenomena. It was about six months after this that she noticed that her hands, feet, and head and face, had grown larger, and that her physiognomy had so altered that many persons did not recognize her. During these six months she had experienced a gnawing pain in the hands, coming on at three o'clock at night and lasting until eight or nine in the morning. The pains were severe, and prevented sleep. The arms became weak, and the fingers clumsy. During the years following the patient noticed a constant growth of the hands, feet, and head. The painful sensation in the hands gave way to erratic and often violent pain, lasting hours or days, and occurring principally in the calves, thighs, and shoulders. The dyspeptic disorders diminished, langour was still present at intervals, vision was slightly impaired, hearing also, due probably to a purulent catarrh. There was slight cardiac palpitation and some oppression.

When examined, the most striking feature was the enormous size of the head, with very prominent frontal, parietal, and occipital protuberances. The face was also hypertrophied in certain parts, the nose being enormous, and the lower jaw having grown to such an extent that when the jaws were closed the lower incisors were separated ¾ inch from the upper ones. The teeth were separated from each other in the gums. There was very pronounced macroglossia, interfering to some extent with talking and with mastication. The hands, too, were much enlarged in breadth and in thickness, though no longer than normal; the fingers being round and thick. The thenar and hypothenar eminences were bulging and constituted marked prominences; the palmar folds were very evident. The feet were enlarged in a similar manner, the hypertrophy of the great toes being remarkable. All the bones of the foot and leg appeared to be thickened. The large size of the abdomen and the fat on the buttocks prevented the positive determination of the condition of the pelvis, but the crests of the ilia appeared to

be somewhat enlarged. Nothing else abnormal could be detected in the trunk.

The patient suffered from continual languor and weakness. The size of the fingers produced awkwardness, and there were stiffness and at times tingling, but never any symptoms of paresis. There were some erratic and transitory pains in the lower extremities and in the lumbar region. The intelligence was normal. The patient suffered from profuse perspiration coming on after the least exercise. No other symptoms presented themselves bearing upon the disease.

Intratracheal Injections of Creasoted Oil.

Dor (*Rev. de Méd.*, February, 1890) terminates an exhaustive article on this subject with the following conclusions:

1. Intratracheal injections of creasoted oil, of the strength of 1 in 20, are admirably borne by the majority of patients. 31 minims may be injected twice a day; this equalling 3.1 grains of creasote. The author has never observed any complications provoked by the use of the injections; the patients never had hæmoptysis, fever, or stitch in the side which could be attributed to the medicine, and digestive troubles were not produced analogous to those seen when creasote is administered internally.

2. Experiments on animals showed that the oil reached the alveoli, and stayed there fifteen days, and that it is unfitting to make use of glycerine or vaseline as an excipient, but that olive oil, which has been sterilized by boiling, should be employed.

3. The injections of 31 minims of the oil twice daily should be practised during many months. It is necessary to auscult the patients frequently, and to make them take the position necessary to allow the oil to penetrate to the diseased portions of the lungs. It is often possible to determine whether the oil has reached the part by the production of bubbling râles.

4. In the majority of cases under the influence of this treatment, expectoration diminished, pain in the side disappeared, appetite returned, and weight increased. The auscultatory signs were modified somewhat.

5. It is principally tuberculous patients of the first or second degree who are benefited by the treatment. For patients with numerous cavities, it would be better to choose an antiseptic more powerful than creasote; and camphorated naphthol appears to answer this purpose. A solution of one-tenth strength is tolerated by the trachea, but the author has not studied the influence of this substance on foci of suppuration in the lungs.

The Gastric Mucous Membrane in Secondary Diseases of the Stomach.

Stintzing (*Münch. med. Wochenschrift*, February 18, 1890) calls attention to the frequency with which the stomach is secondarily affected in all severe diseases. The chief complaint of consumptive patients, and those with heart disease, is often of gastric disturbances; and in infectious and nervous diseases appetite and digestion are often much impaired. It might almost be said that no one dies without disordered action of the stomach, apart from cases of sudden death. It is not certain whether these dyspeptic

disorders are functional or organic. In any case the secondary affections of the stomach demand careful consideration, since with a better knowledge of them we shall understand better their therapy, and the difficult matter of appropriate sick diet. Stintzing has already published some observations on the anatomical changes observed in such secondary diseases of the stomach, as nervous dyspepsia and the dyspepsia of phthisis and of heart disease, and has shown that severe organic disturbances may take place in them. As a further contribution to this subject he reports several cases which he has recently examined. The first was a case of acute pulmonary tuberculosis in a girl of twenty-three years, in which death took place in the course of a few weeks. The epithelium of the rugæ was partly degenerated and in many places exhibited a cuboidal appearance or had suffered destruction in the mucus covering the surface of the membrane. The very great hyperæmia of the upper epithelial layer was particularly striking. But few leucocytes were found penetrating the upper layer in comparison with the number seen in chronic cases, but the small-celled infiltration and the hypertrophy of connective tissue were just as great. The lumen of the glands was moderately widened and contained mucous masses but no cells. The parietal cells were of normal size and form, but frequently granular and not sharply outlined. The chief cells were likewise poorly defined and did not stain well. "Food cells" (*mastzellen*) were found between the glands. The *muscularis mucosæ* contained no pigment.

In another case, that of a man of twenty-five years, dying from hypertrophy and dilatation of the heart, with symptoms of great passive congestion, histological changes of a high degree were found. In all layers of the mucous membrane there was a great increase of connective tissue, and the tubular glands were much diminished in number and much branched. The glands were for the most part widened, their cells flattened, and the parietal and chief cells scarcely to be distinguished from each other, and the former in some localities were diminished in number and marked by the accumulation of nuclei in one cell. The "food cells" were especially numerous, situated chiefly in the inter- and subglandular connective tissue, and penetrating between the tunica propria and the glandular cells, and even between these cells themselves. There was rather scanty pigment in the *muscularis mucosæ*.

Two other cases were examined, one of uncomplicated typhoid fever, the other complicated by heart disease. In the first there was extensive degeneration of the epithelium of the glands and of the superficial layer, together with a decided increase of the connective tissue. The glands were dilated, their mucous membrane in folds, and their lumen filled with mucus and the remains of leucocytes. In the other case the number of the parietal cells was diminished, and cells were found which appeared to be transitional forms between the chief and the parietal cells. The *muscularis mucosæ* contained considerable pigment in the second case but none in the first.

A review of the appearances seen in the different cases shows that though alike in some respects they differ much in others. There was no migration of leucocytes through the superficial epithelium in the case of tuberculosis. The number of the parietal cells was diminished in typhoid fever, but an instance of their absence could not be determined. The advance of the food

cells out of the connective tissue into the glands indicated that these cells, under diseased conditions, entered into some relation with the glandular cells; but it is still doubtful whether for furnishing nourishment to the degenerated glandular cells, or for removing the products of decomposition going on in them, or for other purposes. The presence of pigment in the *muscularis mucosæ* appears to occur in cases in which the stomach has frequently before been exposed to injurious influences.

ON THE MODIFICATION OF THE GASTRIC FUNCTION OF THE STOMACH.

As a result of experimental and clinical studies, FERRANINI (*Münch. med. Wochenschrift*, February 18, 1890) comes to the following conclusions:

1. Purely nervous gastropathies are excessively rare.

2. Disturbances of chemism or of secretion may be present alone, but motor disturbances and affections of absorptive power are always attended by affected secretion.

3. The most frequent functional disorder of the stomach is hyperacidity of the gastric juice.

4. In hyperacidity of the gastric juice the symptoms are related in part directly to the increased amount of hydrochloric acid present, and the increase of the antifermentative action; in part to the cause whose result the hyperacidity is.

5. Cases of hyperacidity in which the motility and the power of absorption are normal, or only the motility is disturbed, may rest on a purely nervous basis. If, however, both of the last-mentioned functions are involved, the case is one of beginning chronic gastritis.

6. Hyperacidity may be purely primary, but in chronic gastritis it, like the other functional disturbances mentioned, is the result of an anatomical lesion.

7. In hyperacidity of a purely nervous origin the diminished motility is improved if the acid gastric secretion be neutralized. If, on the other hand, it is due to chronic gastritis, the neutralization is without effect.

8. In gastric ulcer hyperacidity is the most constant symptom; and the other disturbances attending it permit of a conclusion whether chronic gastritis is also present.

9. Simple chronic gastritis is to be distinguished from atrophic and sclerotic gastritis by the absence in the latter of the hydrochloric acid, pepsin, and lactic ferments, the abolition of the power to dissolve starch, the possibility of the solution of albumin under the influence of lactic and butyric acids, and the diminution of the power of absorption and of the motility.

10. This simultaneous existence of the alterations in the different functions of the stomach offers no criterion for the assumption of the presence of a carcinoma.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

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Contra-indications to the Method of Suspension in Spinal Disease.

M. Paul Cheron (*L'Union Médicale*, Feb. 4, 1890) sums up the accidents which have occurred during suspension and the general contra-indications as follows: Professor Charcot reported some of these accidents as having happened at the Salpêtrière during the earliest application of the method. A patient with atheromatous disease but without valvular lesion of the heart, developed œdema of the inferior limbs after the seventeenth treatment; his heart having been overtaxed. In another case after several treatments the patient became faint, which was soon followed by actual syncope; a similar accident occurred with another patient. The paretic symptoms in a case of tabes with marked anæmia, were much aggravated under this treatment. M. Charcot has noted a radial paralysis from pressure upon and rupture of an atheromatous artery, which was determined by compression used in the armpit. Erb, too, has seen, after several treatments, a constriction at the level of the chest, great weakness, and sudden death, for which the autopsy failed to show any cause. The patient was very heavy. Morton has reported an increase of cutaneous anæsthesia and of cervical cramps. M. Gilis, in a case of vertebral polyarthritis where Sayre's jacket was used, states that entire unconsciousness ensued.

Dr. Blocq reports that a patient suffering with tabes and general paralysis, having learned from a physician the *modus faciendi* of suspension, wished to treat himself; after one treatment he fell into a comatose state and rapidly succumbed.

A woman in New York strangled herself by the displacement of the chinpiece and the double strap. A tabetic patient with paraplegia caused himself to be suspended every day by a servant; he died in twenty-four hours after a treatment (Gowcki).

In a case recently reported by Borsari, a patient afflicted with irregular heart action became unconscious after each suspension, convulsive movements of the extremities were present, and inability to walk. Vomiting and fever soon followed, and death resulted three days after the last suspension. In addition to the ordinary lesions, acute cerebral and spinal lepto-meningitis was found. These accidents show that all treatments should be directed by a physician or an experienced assistant.

Blocq has placed under three heads the different contra-indications of treatment by suspension (*Bulletin Méd.*, 1889, 46):

(1) The general condition.

(2) Some affections of the cardio-pulmonary and nervous systems.

(3) Certain local lesions.

(1) Great debility and marked anæmia contra-indicate this method of treatment. Œdema and obesity necessitate active suspension, the first often renders suspension very painful. In cases of this kind the apparatus of S. Weir Mitchell would be of great service.

(2) During suspension respiration increases in frequency and diminishes in fulness. Chronic affections of the respiratory passages, such as emphysema and pulmonary phthisis strongly contra-indicate this treatment. Atheroma favors rupture of vessels from the direct pressure of the straps. As suspension increases the frequency of the pulse, it should not be used for patients who are liable to congestive or cerebral apoplexy. All the cardiac affections and those of large vessels are an express contra-indication; compression with such patients has a tendency to produce syncope, attacks of dyspepsia, drowsiness, etc., however they are often prevented by talking with the patient during the suspension (Motchoulkowski).

(3) The teeth should be carefully examined, as sometimes they are so fragile, or carious, that the bandage for the chin cannot be adjusted. It is well to abstain from this treatment in a case of tabes predisposed to spontaneous fractures.

Chronic Obstruction of the Common Bile-duct by Gall-stones.

Dr. William Osler publishes, in *The Annals of Surgery* (March, 1890), that portion of his elaborate memoir on hepatic fever which is of most importance to the practical surgeon. The fever he speaks of is due to chronic obstruction of the common duct by gall-stones, is intermittent in character, and the cases present the following group of symptoms:

1. Jaundice of varying intensity, deepening after each paroxysm, and which may persist for months, or even years.

2. Ague-like paroxysms characterized by chill, fever, and sweating, after which the jaundice usually becomes more intense.

3. At the same time of the paroxysms, pain in the region of the liver, with gastric disturbance.

In a majority of cases this combination of symptoms is characteristic of the existence of gall-stones in the common duct.

We meet with rigors, fever, and sweats in three conditions of the bile passages: As an acute and transitory process in ordinary hepatic colic associated with the passage of a stone through the duct. In chronic obstruction of the duct, usually by stone, without lesions of the bile passages other than dilatation and catarrhal cholangitis. In suppurative cholangitis produced by gall-stones or other causes.

He details eight cases of this character, and analyzes the symptoms as follows: First. Jaundice.—This was present in every instance and may be said to have been constant, though varying very greatly in its intensity. In every one of the cases the statement occurs that after the paroxysm the jaundice invariably deepened.

Dr. Osler does not remember ever to have seen a well-marked paroxysm, with intense rigor and high fever, in which this peculiarity did not occur.

The patient soon learned to recognize it and to expect it, as a matter of course.

With this, the amount of bile-pigment increased in the urine, and the stools became more clay-colored. After persisting for a week or ten days, the tint would become lighter until the skin would become, in the intervals, almost normal. The urine, too, would be lighter in color and the stools contain bile. In certain of the cases the jaundice for months together was of the most intense grade. It is possible that cases of intermittent pyrexia may occur without jaundice, owing to chronic obstruction of a main duct in the liver. Magnin refers to one under Charcot's care.

Second. Fever.—This, in well-developed paroxysms, begins with a sharp rigor. It may be represented, however, only by a sensation of cold, a creeping chill, in contradistinction to a shaking one. The fever rises suddenly, and may reach from 103° to 105°. At first dry and pungent, the skin gradually becomes moist, and usually within from two to five hours of the commencement of the rigor the patient is bathed in perspiration. The entire duration of the fever is from six to twelve hours; rarely does it persist for an entire day. Defervescence takes place rapidly when the sweating begins. Although the rule is for the paroxysm to present the usual stages, as here described, there were in each of the cases lesser attacks, often of fever alone or of fever with sweating. Slight rises of temperature without chills also occurred. Sweating was occasionally seen without the fever. The paroxysms occur at irregular intervals. They may present a tertian or a quartan type, and in such cases the diagnosis of ordinary ague may be made.

Third. Pain of some sort is, as a rule, present. It may, but certainly does not always, precede the rigor. In some cases it is not at all a striking feature, and the most intense paroxysms may be quite painless or only accompanied by a sense of gastric distress. It may have all the characteristics of genuine hepatic colic, agonizing, griping pain in the liver region, with the associated symptoms, feeble pulse, and clammy skin. In several of the cases the pain was not at all a distressing symptom.

Fourth. Gastric disturbances.—Vomiting often precedes or accompanies the attack, and frequently before its onset the patient complains of loss of appetite or nausea; the tongue becomes furred, and it seemed very often as if a gastric catarrh really initiated the paroxysm.

The condition of the patients in the intervals between the attacks is a point of considerable importance. They are often well enough to resume their work, or, in the case of women, to do light household duties. There is not progressive deterioration of health and strength, such as we meet in malignant disease. With the exception of one, who had been ill three years, the patients were all well nourished—some of them fat; even one woman, who had been jaundiced, she said, for ten years, had a very fair layer of panniculus.

Regnard found in one case that the excretion of urea was diminished during the attack. Only in one case was a careful study of the urea made during the attacks, but no special diminution was found.

Diagnosis.—The significance of hepatic intermittent fever cannot be appreciated without taking into account the associated group of symptoms, and when these are present it points clearly to obstruction of the common duct by calculus. The condition of the bile-passages in these cases is one of catarrhal,

not suppurative, cholangitis. Chronic obstruction of the bile-duct, either by stenosis or by gall-stones, may persist for months without inducing this intermittent pyrexia.

From a practical standpoint suppurative cholangitis is the only affection from which gall-stones with hepatic intermittent fever is to be differentiated. The post-mortems in two of Dr. Osler's cases, and numerous observations in the literature of the subject, show conclusively that the intermittent pyrexia in these long-standing cases is not necessarily associated with suppuration in the ducts. But, unfortunately, suppurative cholangitis is most frequently caused by blocking of the common duct with a stone; and it is important to determine in a given case the onset of suppuration. In deciding this, stress may be laid upon the following points: 1. Increased tenderness in the hepatic region with possibly enlargement of the gall-bladder, as this is a more common event in suppurative cholangitis than in simple obstruction of the duct. 2. The more frequent return of the paroxysms, and in some instances the irregularly remittent character of the fever. 3. The jaundice is not so intense in suppurative cholangitis, and we do not see the remarkable deepening in color after the paroxysms. 4. The general condition of the patient in the intervals is very different in the two conditions. When suppuration exists there are rarely the prolonged periods of apyrexia, the freedom from distress and the general betterment which we see in cases of simple gall-stone obstruction.

Treatment.—The remarkable success which has recently been obtained by surgeons indicates clearly the line of treatment which should be followed, and although the results of opening the common duct have not been so favorable as in cholecystotomy, yet they are sufficiently hopeful to warrant the attempt in every case, either to push the stone into the duodenum, or to crush and extract it.

Of medicinal agents none has been found of the slightest value, either in preventing the onset of the paroxysm or causing the solution or propulsion of the stone. Certain of Dr. Osler's cases were drenched with olive oil, and most of them had taken soda salts and mineral waters. Many of them had taken quinine in large doses, but it was quite ineffectual, either to control or to prevent the paroxysm.

Dr. Osler arrives at the following conclusions:

1. Chronic obstruction of the common bile-duct is often accompanied by an intermittent pyrexia, associated with a symptom-group of the greatest diagnostic importance.

2. This apyrexia is not usually the result of suppuration, as has been supposed, but occurs with a catarrhal cholangitis.

3. That it arises from the absorption of a ferment, produced in the ducts, is rendered highly probable by the discovery of microörganisms, both in the catarrhal (Case 1) and in the suppurative cholangitis (Netter and Martha).

4. While recovery may follow, even after months (Cases 2 and 8), or even years (Case 3), a fatal event is only too common.

5. A recognition of the importance of this intermittent pyrexia and its associated symptom-group, as diagnostic of obstruction of the common duct by gall-stones, should, in the present condition of hepatic surgery, lead to more frequent operative interference in these cases.

Operation for Cholelithiasis.

In a consideration of the operation appropriate to the treatment of biliary calculi, Kocher (*Correspondenzbl. für Schweitz. Aert.*, Feb. 15, 1890) rejects cholecystotomy with suturing of the gall-bladder, incision, and return of that organ to the peritoneal cavity. To be preferred in case of calculi in the gall-bladder is either cholecystostomy or cholecystectomy. In case there is obstruction to the ductus choledochus, or cystic duct, however, the ideal operation consists in removing the stone by way of the gall-bladder, performing cholecystenterostomy, as suggested by Nüssbaum. Menostyrski's two cases of this operation were both successful. Of course, this operation is only applicable when there is a gall-bladder; as a result of inflammatory change, or atrophy, frequently no gall-bladder can be found. For these cases, and for those in which the stone is fixed in a dilated hepatic duct, cholelithotripsy, as suggested by Lawson Tait, is indicated.

Credé performed this operation with a successful result in a case where the gall-bladder was universally adherent, and contained two stones, and had its duct obliterated; in addition, a stone was found in the common duct; this was crushed, and the fragments were subsequently expelled by three efforts on the part of the patient, each characterized by violent colic.

Kocher's case, which he considers typifies the conditions indicating crushing, was as follows:

Man, æt. fifty-two. Consumption in the family. Had suffered at long intervals from biliary colic for fifteen years. Had passed gall-stones. Attacks of pain recurring at more frequent intervals lately until the pain and tenderness became constant. In the last few months before entrance to the hospital very frequently repeated pain with chills and fever, and often accompanied by violent muscular spasms. A green, thick, slimy deposit in the urine, closely resembling gall. The patient has been markedly jaundiced for upward of a year. Liver enlarged downward four finger-breadths below the right margin, the left lobe participating in this growth. Gall-bladder not to be found by physical examination. Feces slightly colored by bile. The attack of colic had been characterized by most violent pains, by coma, and subsequently by the appearance of bile in the urine.

The diagnosis was cholelithiasis, with only partial obstruction to the escape of bile, but as to whether the stone was lodged in the common duct at the point of exit of the cystic duct, or in the hepatic duct could not be positively determined.

An oblique incision, nearly eight inches in length, was made, extending from the median to the axillary line, and placed slightly above the lower margin of the liver; it divided the rectus together with the other abdominal muscles. The liver was tilted up and the adhesions of omentum and the large and small intestines to the under surface were separated. No gall-bladder could be found, even its duct being reduced to an impermeable cord. The common duct was greatly dilated, being obstructed by two stones, one the size of a hazel-nut. These were readily crushed by pressure between the finger and thumb. In preparation for an eventual choledocho-duodenostomy, the common duct was secured to the duodenum by means of fine sutures. Temperature at the close of the operation 95°. The subsequent course of this

case was most gratifying. On the eighth day there was an evacuation from the bowels containing the fragments of the stones, and normally colored with bile.

Kocher considers the fingers as the best instrument for performing cholelithotripsy; it is most important that the seat of operation should be readily accessible, therefore a long transverse incision is desirable; and that the surgeon may clearly feel and see what he is doing, all adhesions to bowel or omentum should be carefully separated.

In this case the attack—characterized by loss of consciousness, violent spasmodic convulsions of all the muscles of the body, lasting an entire night, and followed by gall in the urine, not merely the coloring matter of gall, but all the constituents of this secretion—evidently signalled a perforation of the gall-bladder, as a result of which the viscus subsequently atrophied.

In discussing the question as to the best proper procedure to adopt in the surgical treatment of gall-stones, SENGER (*Berlin. klin. Woch.*, January 13, 1890) takes exception to Langenbuch's position as to cholecystectomy being, in so far as the life of the patient is concerned, a much safer operation than cholecystotomy, and quotes Dépage's statistics (*Journ. de Méd. de Brux.*, 1888, Nos. 21, 22, 25) in favor of the latter operation. Of 72 cases, 16.2 per cent. died immediately after the operation, 25.5 per cent. were left with a permanent fistula, and 58.3 per cent. were definitely cured. The two great dangers in any operation upon the gall-bladder are bleeding and peritonitis. In the separation of adhesions, the hemorrhage is often alarming in its rapidity and persistence. The probability of peritonitis is, to a certain extent, in proportion to the length of operation, though the infection commonly arises from the diseased and infiltrated walls of the gall-bladder. That both of these complications are more probable in total extirpation than in simple incision must be granted.

The ideal operation of removing the stone, suturing the bladder, and restoring it to its normal position in the peritoneal cavity, would be universally employed could the operator feel sure that his stitches would hold. As a matter of fact, a gall-bladder is rarely incised, unless its walls are already infiltrated. Since gall-stone in itself produces no symptoms and affects the general condition not at all, till either it produces obstruction to the flow of bile by lodgement in the duct, or till inflammation of the gall-bladder walls is set up, with at first serous, finally purulent effusion—in this inflamed tissue the operator can have no assurance as to prompt union. The feeling of heaviness, the localized tenderness from which the patients suffer and for which they seek relief, must be regarded as almost positive signs that the walls of the gall-bladder are diseased. In some of these cases, especially where there are extensive adhesions, and where the gall-bladder is greatly atrophied, Zielewiczs's resection of the cystic duct is applicable.

The operation which Senger strongly favors is, briefly, the suturing of the skin and parietal peritoneum after having made the first incision, the drawing out of nearly the whole gall-bladder from the peritoneal cavity, the turning over of its fundus upon iodoform gauze, protecting the abdominal wall, and the suture of its fundus to the skin to prevent retraction. In two days the gall-bladder can be incised, the stone removed, and sutures applied to restore the viscus to its normal state. If any of these fail to hold, a resection of the

resultant fistula and a renewed attempt at union can be made. When finally the suture has succeeded, the gall-bladder can be either restored to its proper position, or, being freed from the threads holding it to the skin, can be allowed to recede spontaneously.

Intermediate Laparotomy for Appendicitis.

Dr. Robert F. Weir believes (*Medical News*, March 1, 1890) that while a marked advance has been made in the pathology and treatment of perforations and gangrene of the appendix vermiformis and the abscesses that result therefrom, yet it may be questioned whether sufficient data exist at the present moment to warrant the use of so severe a recourse as a laparotomy in those cases in which the disease, previously of a threatening form, has returned once more to a period of quiet. In other words, Dr. Weir says, it cannot be considered as settled that surgery is justified in its interference by the removal of an appendix when symptoms of urgency are not present. This seems arrayed against the teaching which has emanated from so able an exponent as Mr. Treves, but he himself has verbally and otherwise stated that the application of this intermediate laparotomy must, of necessity, be an extremely limited one. In truth, both physicians and surgeons see so many cases that recover, even when an operation almost stares one in the face, especially in these subacute cases, that we feel some uncertainty in these instances.

It is only in the actively progressing troubles in the right iliac fossa that surgeons are now in accord as to the necessity of early interference. As one of those who labored to present this conclusion to the profession, Dr. Weir asks that more consideration be given to this point before accepting too hastily the maxim that the "ounce of prevention" theory applies to an appendix which has given rise to sundry previous attacks of pain, and perhaps dangerous tumefaction in the iliac region.

Though our knowledge has embraced the fact that perforative lesions of the appendix are mainly due to hardened fecal contents or to foreign bodies (?), and that such openings are prone to be followed by general or circumscribed suppurative peritonitis, we are still ignorant, in a great measure, of the simpler forms of appendical trouble, such as inflammation pure and simple, or associated after awhile with stenosis of some part of its canal, and also how often such a stenosis will beget trouble by accumulation of retained materials. Furthermore, if such a distention or inflammation takes place, how dangerous is this compared with the perforative form? or, if perforation occurs from the bursting, is it as infectious as the other kind? May not, too, these simpler troubles be at the bottom of the slighter cases that so often are seen by the family medical attendant, and which the surgeon knows personally but little about? Dr. Weir is influenced by these considerations to advocate delay in most cases in which a condition is not actually present which in itself warrants surgical interference.

The Radical Treatment of Hernia.

Dr. D. Hayes Agnew, in a brief article on this subject (*University Medical Magazine*, April, 1890), comes to the following conclusions: 1. The radical

plan should follow all cases of strangulated rupture in which the knife has been employed for the relief of the patient.

2. There are cases of hernia in the adult which cannot be controlled by mechanical measures, however skilfully applied. Fortunately such cases are not of frequent occurrence, but when met with, and the patient is not too far advanced in life, an operation should not be declined, as the risks from strangulation are greater than those from the knife. Dr. Agnew would not propose an operation in any case where the rupture can be perfectly retained by a truss, giving, as it does when properly fitted, so little inconvenience to the wearer.

3. Children under ten years of age who have rupture, are not proper subjects for operation. Such patients almost invariably recover after wearing a truss for two or three years. Not only so, but even in the event of strangulation occurring in these early years, and requiring an operation for the same, the subsequent use of a truss will prove to be no less efficient than had no such accident happened. This is just what might be expected, as the development which goes on with growing years, naturally tends to consolidate and strengthen the hernial passages. When failure does occur, it is to be charged to an improper, or badly fitted truss, or to inexcusable carelessness on the part of the child, or of those entrusted with the oversight of its life. The pad of the instrument should be a hard one, constructed out of deal wood or hard rubber. The entire apparatus must be adjusted with scrupulous care, fitting so neatly and evenly to the body of the patient as to cause no discomfort whatever. Nor should the truss be removed during the night, except for a short time, while the skin is becoming accustomed to the pressure, when it may be laid aside after the patient retires to bed. To render the surface of the body tolerant to the contact of the pad, the parts should daily, for some time, be well rubbed with alcohol containing some alum, or with soap liniment. The necessity for this preliminary preparation rarely extends over six or eight days, after which the instrument must be worn day and night. When from any cause the temporary removal of a truss is required, it should be done while the patient is in the recumbent position, and be replaced before rising to the feet.

In addition to the instrument habitually worn, a second one ought always to be on hand for temporary use while bathing.

The Radical Treatment of Congenital Inguinal Hernia.

Lauenstein (*Deutsche Zeit. für Chirurg.*, 39 Bd., 3 Hft.) considers under this heading those congenital hernias occurring in the inguinal region, and complicated by an undescended testicle. Both the Kraske-Volkmann method, by which the testicle is sacrificed in the effort to effect absolute closure of the inguinal canal, and the more ordinary operation of separating the testicle from the hernial sac (by cutting), closing the canal as thoroughly as possible, and endeavoring to transplant the testicle into its normal position—*i. e.*, the corresponding side of the scrotum, are unsatisfactory.

A means of both saving the testicle and thoroughly closing the internal ring, is suggested by Lauenstein. He uses not only the hernial sac but also the testicle as a barrier to the escape of the abdominal contents, after which

the inguinal canal and both rings are closed in the manner advised by Macewen. Two cases are reported, both successful up to the present writing. Care must of course be taken that the testicle is not injuriously constricted in drawing the hernial sac (tunica vaginalis) within the internal ring. There is no reason to believe that this procedure would in itself interfere with the function of a healthy testicle.

The Treatment of Tuberculous Inflammation of the Bones and Joints by Means of Iodoform Injections.

Garré (*Correspondenz-Blatt für Schw. Aerz.*, Beilg. No. vi., 1890) states that, in the light of present experience, no one can seriously question the special, inherent, antitubercular power of iodoform. It can positively be stated that none of the therapeutical means heretofore used show such good results, in the class of cases under discussion, as are obtained by the ten per cent. olive-oil solution of iodoform. With the degenerated walls of chronic abscesses the iodoform comes in direct contact, effecting a complete change in their development and encouraging ultimate cicatrization. In the fungous masses which characterize tuberculosis of joints and bones, the drug can be brought in contact with only a very small part of the diseased tissue. Nevertheless, many surgeons have reported gratifying results from the intraparenchymatous injections of the iodoform oil. The iodoform-ether, as prepared by Verneuil, has been abandoned in favor of Brun's oil emulsion which is used in the strength of from ten to twenty per cent. It should not be kept in the light, as this favors its decomposition, as denoted by a brown coloration. Trendelenberg injects a syringeful of this emulsion, once in eight days, into the fungous granulations. Considerable pressure is required to force the liquid into the tissues. If abscesses have been formed, these should first be emptied, then injected. Fistulas are best treated by injecting the mixture into their limiting walls rather than along their canals. The number of injections which will be required cannot be predicted. Many cases are ultimately entirely cured, others are greatly improved, with much freer motion in the affected joint, some are not benefited, but come ultimately to operation. There seems to be very slight danger of iodoform-intoxication, not even a symptom of this being observed in 109 cases thus treated.

Krause reports in the last eighteen months forty-three cases of joint disease treated by means of these injections; cases were selected which had been carefully treated by other means and where cure without operation seemed impossible, but in which fistulas were not yet formed. To prevent iodoform absorption and secure a purely local action of the drug, Krause made an emulsion by means of ether, mucilage, glycerine, and water, which contained ten per cent. of the drug. This is not to be preferred to the olive-oil emulsion, since an exceedingly small quantity of iodoform is dissolved by the oil. The injections were made under rigid antiseptic precautions. Pus was evacuated by means of a trocar and canula of medium size, the joint cavity was thoroughly flushed out with a three per cent. boric solution, and one or two ounces of the iodoform emulsion were injected. Where there was no abscess formation but simply fungous masses, the emulsion was forcibly injected into the tissues by means of a fine canula, four to six drachms

being used at a time. The pain of this procedure is slight, and rarely requires the administration of ether. After injection, passive motion is made to insure thorough distribution. The temperature rises slightly for a day or two following the treatment, but there are no subjective symptoms. The injections are repeated at intervals of two to four weeks. Pain is greatly relieved by this treatment; the swelling yields much more slowly, though in six weeks some cases show a reduction in size and a hardness of the affected part. The abscess cavities frequently fill again rapidly at first, but ultimately cease to discharge. In some cases, fistulæ form at the seat of puncture which first discharge pus, then serum, but ultimately heal entirely. In a fair percentage of cases treated in this way, definitive healing has taken place.

Erasion in Joint Disease.

Dr. Willard, in a paper on arthrectomy (*University Medical Magazine*, April, 1890), comes to the following conclusions:

1. Erasion is a conservative operation designed for the removal of tuberculous material of both soft and hard parts in the region of the articulations, with the least possible sacrifice of healthy tissue. In caseating cases which have not advanced to suppuration, if all the foci can be reached and removed most happy results will follow. In pulpy degenerations, especially at the knee, an excellent cure will usually result. 2. Erasion is not intended to supersede excision, but only to act as a substitute for it in certain cases of tuberculous bone and joint degeneration at an early stage, or in cases where destruction of the bone is limited. In children it is especially valuable, since it interferes less with the epiphyseal cells, and with the subsequent growth. It has proved of special value at the knee-joint in children, where by tenotomy and erasion repeated from time to time, excision can be delayed for several years, and the growth of the limb thereby secured. The element of time with many children is not of serious importance. 3. As excision has diminished the number of former amputations, so erasion will diminish the number of future excisions. 4. Knife, scissors, scoop, and gouge are all needed in the operation. 5. Subsequent ankylosis is usually to be expected. 6. The operation is more quickly performed than excision, produces less shock, and, if extirpation is complete, much time is gained. 7. Thorough and complete asepsis, good drainage, thorough subsequent fixation and absolute protection of the joint for a long period of time, are all essential factors in securing good results.

OTOLOGY.

UNDER THE CHARGE OF

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Disease of the Ear in Influenza.

Dr. Habermann, of Prague, after mentioning the universal tendency of the recent epidemic of influenza to affect the ears, as shown by writers in

various parts of Europe, gives his own experience in the matter (*Prager med. Wochenschrift*, February 19, 1890). He quotes the observations of Neumann, of St. Petersburg, where the epidemic raged in November, and then those of Löwenberg, in Paris, and Dreyfuss and Baginsky, of Berlin. But these observations would not be of extraordinary merit, as ear disease is to be expected in any case of profound nasopharyngeal catarrh, were it not for the fact that later and closer observations of some of the German aurists have rendered it probable that there is a special form of middle-ear disease produced by epidemic influenza.

Thus Patrzek, of Oppeln, observed several cases of influenza-otitis media, in which the characteristic symptom was hemorrhagic extravasation about the manubrium of the malleus and the umbo, and even throughout the entire membrana; and, finally, in two cases there was a copious sero-sanguineous discharge from the ear. Dreyfuss reported cases of severe hemorrhagic inflammation of the membrana tympani, attended with serous or purulent, but rarely hemorrhagic effusion of the drum cavity. He also observed two sets of cases, one in which the symptoms showed themselves in the first day or two of the catarrhal disease; the other, in which the symptoms ensued after the influenza began to pass away, in the course of a week or two, but in which a severe nasal catarrh remained. Schwabach, of Berlin, observed in the course of two weeks sixty-two cases of otitis media, due to the effects of the influenza. These were mostly in one ear only, and in forty-two instances they resulted in suppuration. In twenty-two cases hemorrhagic effusion was detected in the tissues of the membrana tympani, and sometimes large blebs containing blood involved the entire drum membrane. In some instances the walls of the external auditory canal were infiltrated. Haug, of Munich, observed similar conditions. Habermann then states his own experience with this disease between the end of December and the end of January. In thirty-nine cases, due undoubtedly to the effects of influenza, eighteen only were simple otitis media, in which the membrana tympani was not perforated. Sixteen times the disease of the ear was limited to one side, and twice both ears were affected, and in five of the cases there were hemorrhagic effusions in the membrana tympani. Most of the cases suffered little pain, or if the latter was severe it was of short duration. Except in cases where the ears had been previously diseased, the disease left no traces behind it.

But in twenty-one cases the disease was severe, being attended with rupture of the membrana tympani and discharge from the ear. In seven of these cases blebs containing blood appeared on the membrana tympani, and in two of these cases this extravasation continued outward throughout the entire osseous canal wall. The majority of these cases were affected on the second or third day of the influenza. In others, the rupture of the membrana did not occur for weeks after repeated exacerbations of pain and inflammation in the middle ear. The observations of Habermann correspond with those of others already alluded to, viz., that in many instances during the recent epidemic, a peculiar influenza-ear-disease was observed, characterized by a hemorrhagic tendency in the membrana tympani and the osseous part of the external auditory canal.

Dr. A. Eitelberg, of Vienna, corroborates, by his experience during the recent epidemic of influenza, the observations and statements of other

aurists (*Wiener med. Presse*, February 16, 1890). He had access to about one hundred cases of ear-disease occurring in connection with influenza. Extravasations of blood in various parts of the membrana tympani were frequently observed. In some cases his aid was sought for "the great hemorrhage from the ear." The mastoid was tender to pressure in most cases, but only one demanded special local treatment of the mastoid. A much more painful complication was the otitis externa which usually attended these cases. In thirty-five cases seen in private, in three instances the perforation was in the membrane of Schrapnell (the membrana flaccida). But this did not prevent a speedy recovery. The duration of the disease in all cases was, on an average, from eight to ten days. The hemorrhagic nature of the disease was fully corroborated. Old otorrhœas were rendered worse or lighted up afresh by influenza, to subside again as the acute disease vanished. On the whole, the aural disease of influenza, though peculiar, was of a mild type.

Aural Lesions Observed during the Recent Epidemic of Influenza.

These observations were made by Dr. J. L. Glover in the laryngological clinic of the Lariboisière, in Paris (*Annales des Maladies de l' Oreille*, February, 1890). The cases forming the basis of these observations were characterized by a marked predominance of catarrhal symptoms in the rhino-pharyngo-laryngeal mucous membranes. All the patients were adults, and there were more women than men. The aural disease developed from the fifth to the tenth day of the grippe, and generally in from three to five days after the establishment of the rhino-pharyngeal symptoms. The other grippe symptoms were usually light, excepting the rhino-pharyngeal catarrh, which was uniformly pronounced.

All of the patients had had a violent coryza, some dysphagia, a little dysphonia, with aphonia and a cough. The fever varied from keeping the patient in bed to that which required him to stay in his room and abstain from work. There were also pain in the limbs, headache, and loss of appetite. It was also noted that in some instances the patients had previously suffered—perhaps years before—with disease of the nasal or buccal pharynx. Another fact was noted, viz., that those suffering from otitis had had, some days previous to the ear-symptoms, dysphonia, or even aphonia.

The course of the symptoms was rapid. At first there was a period of pain in which the paroxysms were often intense, with alterations in hearing, during which the objective symptoms consisted in a little redness in the annulus tympanicus and in the manubrium of the malleus. At the same time there was a catarrh of the Eustachian tube, followed soon by opacity of the membrana tympani and its immobility from the accumulation of liquid in the drum-cavity. The membrana tympani now became distended, and finally ruptured about ten days after the onset of the otitis, and then an abundant otorrhœa was established. This relieved the sufferings of the patient, but the middle ear was found in a very bad condition. In some instances paracentesis of the membrana was indicated and performed, thus limiting the ravages of the inflammation. But many of the patients presented them-

selves for the first time after the spontaneous rupture of the membrana. In one instance there was a consecutive mastoiditis, while in another the entire tympanic cavity was evacuated by the disease, the ossicles being destroyed or removed so as not to be seen. The prognosis, as regards hearing, in all the cases was considered discouraging.

The treatment consisted, in those who had no serious throat symptoms, in irrigation of the nasopharynx with a three per cent. solution of boric acid, repeated three times daily. In cases of non-suppurative otitis media warm emollient or narcotic irrigation of the auditory canal was employed, and leeches on the mastoid process. Local abstraction of blood was not considered, however, to have had any good result. Whenever the pain in the ear was severe and the membrana tympani was found to be bulging outward from the secretion in the drum-cavity, paracentesis was performed, after which the ear was washed out with a boric acid solution. Then the auditory canal mopped with cotton soaked with camphorated naphthol (one part naphthol and three of camphor).

When the patients presented themselves with a perforation in the membrane and otorrhœa already established, with the Eustachian tube more or less closed, and great deafness, the ear was syringed three times daily with boric acid solution. Every second day in such cases the fundus of the canal and the drum-cavity was mopped out with the camphor-naphthol solution named above, on cotton fastened to the cotton-holder. When necessary the Eustachian tube was catheterized, or the tympana inflated by Politzer's method. The applications of camphorated naphthol were followed at once by a cessation of the discharge.

Acquired Atresiæ of the External Auditory Canal.

Prof. Adam Politzer, of Vienna, has contributed an interesting paper on the above-named subject to the *Annales des Malades de l' Oreille*, November, 1889. The article is based on the observation of two cases observed during life, and in which a post mortem examination was able to supplement the previous observations.

The first specimen came from a young woman who had been under the observation of Prof. Politzer for twenty years. In the early part of this period the patient had a chronic suppuration of the left middle ear, complicated by a polyp attached to the tympanic cavity. Portions of this polyp were removed by the Wilde's snare in the first months of the treatment, but unavoidable interruptions occurring, the patient absented herself from treatment for two years. At the end of that time the polyp was found to have filled the entire auditory canal and grown fast to its walls in the inner portion.

As soon as this adhesion between the polyp and the walls of the auditory canal had been completed the discharge of pus ceased entirely, and a slight facial paralysis ensued. Again the patient disappeared from observation for several years. At this time examination revealed such union between the polyp and canal-walls as to render their respective limits undistinguishable. There seemed to be a depressed diaphragm across the canal, covered with a thick layer of epidermis. There was complete deafness on this side, but no pain, no tinnitus, no vertigo, nor headache. It is thus shown that here

was a rare case of atresia of the auditory canal caused by an adhesion between a large polypus and the walls of the canal.

In the second case reported by Politzer the atresia of the auditory canal was observed in a man sixty-four years old, who had suffered with a chronic otorrhœa since the age of twelve years. The atresia had been complete for the last fifteen years of his life. Examination of the ear revealed an atresia of the canal in its osseous portion, composed of dense connective tissue, with a funnel-shaped depression at the opening of the canal. The same condition was found in both ears.

In regard to the first case, the author maintains that had the patient remained under treatment the atresia and the changes found in the deeper parts of the ear and cranial cavity could have been averted by radical treatment of the polypus.

In the second case destruction of the granulations in the auditory canal would have prevented the atresia of its passage. This can be accomplished by patient and constant destruction of granulations as they form, and the instillation of alcohol into the ear.

Two Otological Mistakes.

Dr. S. Szenes calls attention to two mistakes in the treatment of the ear often made by unskilful physicians—viz.: instrumental extraction of foreign bodies from the ear, and indiscreet syringing of the ear as well as the indiscriminate use of drops in the *external* ear in cases of catarrh of the *middle* ear. —*Allgem. Wiener med. Zeitung*, No. 29, 1889.

A New Pathogenic Mould Fungus in the Human Auditory Canal.

W. Lindt, in the *Archiv f. experiment. Pathol. u. Pharmakol.*, Bd. xxv. Hefte 3 and 4), describes a new fungus found in the human ear-canal. The fungus is blue-green, due to its colored conidia. The stems of the conidia are very short, single, and carry unbranched, colorless sterigmata. The latter surrounded the pear-shaped swelling at the end of the conidia-stem for two-thirds of its circumference in a radiate arrangement. The author names the fungus *Eurotium malignum* (*Archiv f. Ohrenheilkunde*, Bd. xxviii., Oct. 1889).

Fibroma Auriculæ.

Dr. Wilhelm Anton, of Prague, has observed and recorded the rare occurrence of a soft fibroma in the auricle. The growth of connective tissue tumors in the lobule, however, is a common occurrence (*Archiv für Ohrenheilkunde*, Bd. xxviii., October, 1889). The tumor was found in the ear of a man forty years old. His statement was that the new growth had developed in his ear within four months of the time he presented himself to Dr. Anton. His ear was said to have not been previously diseased in any way. There had never been any pain in the tumor, but it had bled when touched. Examination of the left ear revealed the presence in it of a tumor the size of a walnut, with ulcerated surface nearly filling the concha and the external auditory canal. Its color was reddish and its consistence soft. It was attached by a pedicle

and not a broad base. The tumor was removed by burning through the pedicle with the galvano-cautery in form of a loop.

The pedicle, four millimetres wide, was attached between the spina helicis and the under limb of the crura furcata. The microscope revealed the tumor to be connective tissue new-growth with alveolar structure and changes of an inflammatory nature in the connective tissue.

A Case of Diabetic Primary Ostitis of the Mastoid Process.

Dr. Otto Körner, of Frankfurt-on-the-Main, gives an account of this disease, with some remarks on the effect of major operations on the course of diabetes (*Archiv für Ohrenheilkunde*, Bd. xxix., December, 1889). The case occurred in Dr. Körner's practice, and the facts were briefly as follows: A man, forty-seven years old, previously entirely healthy as far as he knew, took cold in his head and suffered with great pain in the right side of his head and face. The next day this pain seemed to localize itself in and behind the right ear. It grew worse, and at night became unendurable. In the course of ten days a purulent discharge set in from the painful ear, but the pain in it did not abate. Enlargement of the perforation in the membrane gave great relief to the patient, but it did not entirely cease. The absence of fever, the pallor, the continued pain in the ear, and the profuse suppuration, aroused the suspicion of some form of constitutional disorder. Trommer's test revealed the presence of sugar in the urine, though there had never been polydipsia nor excessive hunger. The sugar in the urine diminished under careful diet; but the quantity and the quality of the pus remained unchanged, as did the pulse and temperature. In the course of a month from this time, some tenderness in the mastoid was discovered, but this was slight and remained so. There was no external sign of disease in the bone. In the course of another month the appearance of the pus changed to a darker, brownish color, and increased in quantity. There was yet no bad odor to the secretion. The perforation in the membrane had become larger in the meantime, and some granulations sprang up near it. These were cauterized away with chromic acid melted on a silver probe. The patient's strength was greater, and the amount of sugar in the urine less, but the local symptoms in the ear were worse.

Körner therefore concluded that he had to deal with "an extensive, acute ostitis in the mastoid cavity, with normal external surface." This latter fact seemed to render prompt opening of the pus-cavity in the bone imperative, as just in such a case extensive inroad may be very likely to occur. The fact, too, that the patient presented a brachycephalic head (index 1,10) showed that the pus cavity was near the temporal lobe, cerebellum, and the transverse sinus. Notwithstanding the bad results of operations sometimes ensuing in diabetic subjects, the dangerous nature of the mastoid disease demands a prompt operation, therefore the operation on the mastoid was undertaken, under the strictest antiseptic procedures around the region of the proposed incision and in the ear. The mastoid cortex was found entirely normal on its outer surface, but an opening in it, made at a sensitive spot behind the auricle, revealed a cavity, three millimetres from the surface of the bone, as large as a walnut, filled with soft granulations,

and comprising the entire mastoid cavity. This cavity was cleaned out and packed with iodoform gauze. After this was done the outer wall of this space, comprising nearly all the external surface of the mastoid, was chiselled off. By this means a view of the cavity was obtained, and all diseased bone removed. Neither the dura mater nor the transverse sinus was exposed. After disinfection of the wound-cavity with a sublimate solution, it was packed with iodoform gauze, and a permanent bandage placed over it. Recovery was uninterrupted. On the fourth day the external bandage was removed, and a new tampon placed in the external ear. Only a slight trace of pus was found in the fundus of the auditory canal. The tampon in the wound-cavity in the mastoid was not disturbed. The first complete change was made on the ninth day. Again on the fifteenth day the dressings were changed, when it was found that the perforation in the membrana tympani had closed. In the ninth week only a small fistulous opening was found in the wound. This closed entirely by the thirteenth week. The hearing was for a watch about ten centimetres, and for a whisper nine metres. The patient's strength returned, and he could pursue his business.

Körner regarded the suppuration in the ear in this instance rather as the result than the cause of the mastoid disease.

The question, under what circumstances can a diabetic patient be subjected to a prolonged surgical operation without risk, cannot be satisfactorily answered in a scientific manner, until a large number of cases are collected in which the diabetic excretion is determined before and after the operation. Körner claims that the case related by him shows that a diabetic patient, with a mild form of the disease, can resist a prolonged, severe operation without injury, and that the diabetes, excepting a short temporary increase in the amount of sugar excreted, was not made worse.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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Intubation of the Œsophagus for Stricture.

Dr. Kümmell presented a patient to the Aerztlicher Verein zu Hamburg (*Deutsche med. Wochenschrift*, March 6, 1890) whom he was successfully treating for an exceedingly tight stricture at the upper extremity of the œsophagus, by means of intubation with Leyden's tubes, inserted after an œsophagotomy performed for the purpose of attempting to remove a suspected carcinoma. Exploration through the wound having demonstrated the error in diagnosis, gradual dilatation was practised, and food was administered for a time by the catheter. The intubation tube became so frequently dislodged by cough and gagging, that one of the threads was purposely passed out through the fistule,

the better to keep the tube in position. The stricture was believed to be syphilitic in origin, and constitutional treatment was being pursued in addition to the dilatation.

Abscess of the Larynx after Influenza.

Dr. Max Schaeffer, of Bremen, reports (*Deutsche med. Wochenschrift*, March 6, 1890) a case of abscess of the right ventricular band and arytenoid region, requiring tracheotomy, and which occurred suddenly about a week after convalescence from a slight attack of influenza. The attendant inspiratory dyspnœa was attributed to acute paralysis of the cricoarytenoid muscles.

Schaeffer takes occasion to extol the treatment of the acute stage of influenza with sodium benzoate. This is confirmative of the observations made in the columns of this journal by Dr. Glasgow, of St. Louis, who, for three or four years past has recognized in his neighborhood the endemic presence of a disease which he could liken only to an endemic of influenza, and which he had successfully treated with sodium benzoate.

Round celled Sarcoma of Larynx Removed by Laryngo-fissure.

Dr. F. Bessel-Hagen exhibited (*Deutsche med. Wochenschrift*, March 6, 1890) a man, fifty-two years of age, from whom, a year previously, he had, after splitting the larynx, removed a broad-based round-celled sarcoma, the size of a cherry, situated below the vocal bands. He had removed the underlying perichondrium, and had also extirpated some infected glands in the neighborhood of the larynx. There had been no recurrence.

[Glandular involvement is usually a comparatively late manifestation in sarcoma; and, therefore, thorough removal of the original neoplasm is not likely to be followed by recurrence.—Ed.]

OBSTETRICS.

UNDER THE CHARGE OF

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An Unusual Injury to a Child at Birth.

Heydrich (*Centralblatt für Gyn.*, No. 7, 1890) reports the case of a fœtus in which it was necessary, because of prolapse of the cord, to extract the child rapidly. The left arm was easily brought down, the right was delivered with difficulty. The fœtus was slightly asphyxiated at birth, but was easily revived by Schultze's method. On the second day after birth the child died, and the post-mortem revealed a fracture of the right clavicle, with a wound

of the costal and pulmonary pleura; emphysema of the skin and pneumothorax had resulted, which finally caused death.

The Preventive Treatment of Purulent Ophthalmia in the Newborn.

Peuch (*Archiv de Tocologie*, No. 2, 1890) has compared the results of three series of cases: one treated by ordinary antiseptic precautions with the mother, one by the use of solutions of bichloride of mercury about the child's eyes, and one by the use of nitrate of silver, as advised in Credé's clinic. The results of these cases, with the published statistics of fifteen of the principal maternities in the world, are decidedly in favor of the Credé method. While the use of antiseptics diminishes greatly the number of these cases, yet silver was found most efficient.

Syphilitic Infection in Early Pregnancy.

Steffeck (*Zeitschrift für Geburtshülfe und Gynäkologie*, Bd. xvii. 1) describes two cases of syphilitic infection occurring in the fifth month of pregnancy previously healthy; both pregnancies went to term, but the fœtus perished as a result of the infection. Careful examination of the placentæ demonstrated the fact that the maternal decidua in one case was scarcely affected, while in the other it was partially involved; the fœtal infection, however, was well marked, and pronounced syphilitic lesions were present.

This case was an exception to the statements of Fränkel and Zilles, who have taught that syphilitic infection occurring in a healthy pregnancy rarely affects the fœtus, but is usually limited to the mother.

Pregnancy Lasting 300 and More Days.

Jaffé (*Centralblatt für Gynäkologie*, No. 5, 1890) reports the case of a multipara in whom gestation lasted between 300 and 309 days; counting from the time of the beginning of the last menstruation, birth occurred 365 days after the commencement of the period. The development and measurements of the child corresponded to the prolonged gestation.

The Editor recalls a recent case in his own practice, also in a multipara, labor occurring several days beyond 300 days after the beginning of pregnancy. In this case the type and development of the fœtus, and the subsequent growth of the child, fully confirmed the diagnosis of 300 days' gestation.

Two Cases of Idiopathic Universal Pruritus occurring at Labor.

Feinberg (*Centralblatt für Gynäkologie*, No. 7, 1890) reports two cases of pruritus vaginæ which at the time of labor became universal; the first case was that of a young woman in whom the disease had been worst at menstruation; during pregnancy palliative treatment mitigated suffering somewhat; at the time of labor her suffering became extreme; the itching existing over the whole body as soon as labor pains came on; anæsthesia was

necessary, and labor was terminated by the forceps. After delivery pruritus was somewhat less, and four days after labor it disappeared, and did not return.

His second case was that of a multipara who had suffered at menstruation with pruritus, and who, under the influence of great excitement, aborted. The patient was seen but once, and that in consultation. The beginning of the abortion was characterized by the spread of the pruritus over the entire body; while a neurasthenic constitution predisposed to this trouble, it was observed to be worse at menstruation and as soon as labor pains began. No lesion was found in either case to account for the disorder.

A Simple Tube for Antiseptic Douches.

Graily Hewitt (*Lancet*, March 8, 1890) has devised glass tubes, simple in construction, which seem admirably adapted for douches. In the ordinary vaginal douche a glass tube four and three-quarters inches long, one and one-eighth inches in diameter, deeply grooved into four grooves in a longitudinal direction, has been employed to great advantage. The grooves act as channels for the easy return of the fluid, making a double current tube; rounded apertures are placed in a circle, close to the distal extremity.

For uterine injections a heavy glass tube, ten inches in length and seven-twelfths of an inch in diameter, deeply grooved at the uterine extremity for three-quarters of the whole length, is employed. It is very slightly curved at the uterine end, and has apertures near the extremity; the four deep grooves act like return tubes for the escape of fluid. The size of the vaginal tubes is so great that they cannot be easily introduced within the uterus, and hence there is less liability to the injection of fluid when simple douches are given by nurses. Intra-uterine douches should be given by physicians only.

The High Application of the Forceps.

Cohnstein (*Archiv für Gynäkologie*, Band 36, Heft 2) reviews the current opinions regarding the compression of the head produced by forceps, and its moulding to the pelvis, and states the results of his own experiments. He believes that the fœtal skull is more easily fractured and less elastic in the dead fœtus than the living, and suggests that all experiments be made upon fœtal bodies which have been immersed in dilute saline solution at a temperature of 100° F.

He has found that compression in the antero-posterior diameter of the head leaves the biparietal diameter without lessening in 55 per cent. of cases; in 20 per cent. it is increased in size; in 25 per cent. diminished. In 80 per cent. of such cases, when the antero-posterior diameter was lessened from one-tenth of an inch to five-tenths of an inch, no increase in the biparietal diameter, and no injurious compression of the maternal soft parts were observed. The biparietal diameter is rarely lessened more than one-twelfth to one-fifteenth of an inch. Increase in the biparietal diameter, from one-tenth to two-tenths of an inch, depends on the form of the skull and the degree of the pressure; in dolichocephalic skulls, and under strong pressure, increase occurs, this being observed in actual practice in about 8 per cent.

of cases. If compression is made in the biparietal diameter, the antero-posterior is unaffected in 50 per cent., increased in 28.5 per cent., lessened in 21.3 per cent. In the great majority of cases compression of the biparietal diameter does not increase the antero-posterior; occasionally uterine pressure and pressure on the pelvic walls shorten the transverse diameter and lengthen the antero-posterior, and the forceps merely reinforce this action. Compression of both parietal and antero-posterior diameters of the head results in some increase in the vertical. The heads of living children are compressed with less force than in the cadaver.

In practice Cohnstein believes in bringing the head to engage with axis-traction forceps, removing them, and reapplying if labor does not go on. He has found great advantage in applying forceps, steadying the head, and then performing craniotomy without removing the forceps, completing labor by extracting the perforated head by forceps. He would use forceps only as an adjuvant to the natural forces of labor. In symmetrically contracted pelves their use has been most advantageous.

The Forceps as a Rotator.

At a recent meeting of the Obstetrical Society of Hamburg, Aly (*Centralblatt für Gynäkologie*, No. 5, 1890) reported a recent case of occipito-posterior position, in which labor made no progress through failure in the expulsive forces. The forceps were applied to the sides of the child's head obliquely in the pelvis, and traction made until the sagittal suture lay transversely; the forceps were then removed, and reapplied in the opposite oblique diameter; rotation followed, with the birth of a large and living child.

In discussion, Lomer did not favor such use of the forceps. He recalled a recent case in his practice where such injury had been done to the mother as to cause her ultimate death. Recent literature upon the subject does not favor this practice; he considered it far better to extract the child with forceps, the occiput remaining posteriorly; in large pelves it was better to bring down the head with forceps, remove the blades, and complete rotation by the hand.

Olshausen would restrict such use of the forceps to experts only; he had often found the introduction of one blade sufficient to cause rotation.

The Knee-chest Position in the Delivery of Shoulder Presentations.

Wells (*American Journal of Obstetrics*, March, 1890) reports nine cases of shoulder presentation, in which version was best performed with the patients in the knee-chest position. He operates by placing the patient upon her knees and chest, stationing himself on that side of the patient corresponding to the position of the fœtal head, and employs the hand next the patient in the internal and the other in the external manipulations. After the introduction of the hand the membranes are ruptured, if yet intact, and pressure is made upon the shoulder toward the child's pelvis in the direction toward the fœtal and uterine curves, and away from the superior strait, and at the same time pressure is made externally upon the fœtal head, or breech, as

seems needed. The shoulder soon passes out of reach, and the head takes its place at the pelvic brim. The patient is now raised upright upon the knees, and supported in this position until the head engages, after which she lies down.

It is occasionally impossible to bring down the head, and then the breech is brought down; if both these procedures are impossible, the feet are sought for and podalic version is made. Ordinarily the fingers or hand need enter the uterus but a very short distance.

Wells claims that in this position the abdomen is relaxed to the greatest possible extent, the pains are less powerful, the uterus is lengthened in its long and shortened in its transverse diameter, and the impacted shoulder is drawn from the pelvic brim by the force of gravity.

GYNECOLOGY.

UNDER THE CHARGE OF

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Herpes Menstrualis.

Bergh (*Hospitals-Tidende; Centralblatt für Gynäkologie*, February 8, 1890), from an experience of twenty-four years in the hospital for venereal diseases in Copenhagen, finds that 2.6 per cent. of prostitutes have *herpes vulvaris*. Out of 877 cases of herpes, 73.4 per cent of the women were menstruating when examined, and many stated that they had the eruption only at the time of their period. It had no apparent connection with previous venereal troubles, or with their practice of indulging in sexual intercourse during the flow. Bergh believes that vulvar herpes is nearly always a menstrual exanthem, probably of trophic origin. The vesicles are most numerous immediately before the flow. They appeared in 70 per cent. of the cases on the labia majora.

The Endometrium During and After Menstruation.

Von Kohlden (*Centralblatt für Gynäkologie*, February 1, 1890) states that immediately after menstruation large gaps are seen in the superficial layer of epithelium, and that during menstruation the entire epithelial layer is cast off, and that there is infiltration and hemorrhage into the mucosa. This infiltration may extend through two-thirds of the thickness of the latter. The blood-clots which are found within the uterus contain desquamated epithelium and glands. No true solution of continuity of the endometrium can be established. The writer has never been able to find the giant-cells described by Leopold, or evidence of dilatation and tortuosity of the glands. The reproduction of epithelium begins *de novo* within the glands, not from islands of cells which were not cast off; there is also a new formation of bloodvessels.

The Etiology of Vesical Gangrene.

Haultain has a paper on this subject in the *British Gynecological Journal* for February, 1890, in which he carefully analyzes the reported cases. His deductions are as follows:

1. This condition consists in necrosis of the wall of the bladder, due to coagulation and exudation; 2. The process may affect the epithelial layer alone, it may be limited to the mucosa and submucosa, or it may involve all the layers; 3. It is always due either to prolonged retention or to parturition; 4. It is directly due to pressure on the neck and base of the bladder, with resulting interference with the circulation.

Ventro-fixation of the Uterus (Laparo-hystéroplexie).

Dumoret's monograph on this subject (abstracted in the *Centralblatt für Gynäkologie*, February 1, 1890) is based on a study of twenty-five cases, five recent ones being Ferrier's. The latter fixes the uterus by three catgut sutures, which are passed through all the layers of the abdominal wall, with the exception of the skin, and then deeply into the substance of the uterus. They are not buried in the latter, but emerge and re-enter two or three times. A drainage-tube is inserted at the lower angle of the wound.

The Operative Treatment of Retroflexion of the Uterus.

Frommel (*Centralblatt für Gynäkologie*, February 8, 1890) describes an ingenious operation which aims at retaining the uterus in its normal position by shortening the utero-sacral ligaments, the importance of which structures as a factor in preventing retro-displacement has been emphasized by Schultze. The patient is placed in Trendelenberg's posture, the elevation of the pelvis causing the intestines to gravitate downward. The uterus is freed from its adhesions, and is drawn well forward. Each utero-sacral ligament is then transfixed near its attachment to the uterus, and is sutured to the peritoneum covering the lateral wall of the pelvis. The ligaments are thus drawn outward nearly at right angles to their former direction, and so much backward traction is made upon the cervix that the uterus is kept in a position of anteversion. Silk is preferable to catgut, as the latter does not hold long enough. The advantage claimed for this method is that the uterus is not fixed, but moves backward and forward as the bladder fills and empties.

[In the last edition of Byford's *Diseases of Women* a similar operation is described, and several cases are reported. Its theory is excellent, but the practice must be both difficult and dangerous.—Ed.]

Vaginal Fixation of the Retroflexed Uterus by Schücking's Method.

Schücking (*Centralblatt für Gynäkologie*, February 22, 1890) states that sixty-two cases have now been reported. In the first twenty the silk ligatures were removed too soon, and no pessary was used, nevertheless twelve patients were permanently cured. In the last forty-three cases there was not a single failure, but as the majority of the operations were performed during the past

year, it is too early to report positive results. The writer opposes ventrofixation, on the same grounds as Freund, viz , that "the non-gravid uterus does not belong in the abdominal, but in the pelvic cavity."

The following points should be remembered in regard to the technique. The ligatures should be left *in situ* for eight or ten weeks. A pessary must be introduced at once. If the urine is bloody, showing that the bladder has been wounded, the organ should be irrigated with a solution of thymol, and a pencil of iodoform or salol should be inserted into it. The uterus should be drawn down slowly and steadily, until the operator satisfies himself that the needle can be passed beneath the right pubic bone. The point of the needle must be protruded at the fundus, and not lower down on the anterior uterine wall. To avoid cutting through the anterior lip of the cervix with the ligature, the latter may be passed through a round button, or it may be carried directly through the substance of the lip. It should be noted that the suture does not pass behind, but close beside the bladder. There are no contra-indications to this operation. It is only necessary to free the adhesions first according to Schultze's method.

Statistics of Vaginal Hysterectomy.

Kaltenbach's most recent statistics (*Centralblatt für Gynäkologie*, February 15, 1890) include fifty-eight cases of vaginal hysterectomy for cancer of the uterus, with two deaths. In forty-nine the disease was confined to the cervix. Twenty patients had been operated upon within a year, eight of whom were known to be well. There were nine cases of carcinoma of the body of the uterus without recurrence, and two of sarcoma, with one recurrence. Of thirty-five patients who had been operated upon over a year before, nineteen had recurrence within the first year and two had not been heard from. The writer advises vaginal extirpation as soon as the disease has extended above the vaginal junction. He practises rigid antisepsis during the operation, and closes the peritoneal wound. If the ureter is wounded and a uterine fistula is formed, he recommends making a vesico-vaginal fistula and performing kolpokleisis, in preference to immediate nephrectomy.

Extirpation of the Uterus and the Pelvic Connective Tissue.

Pawlik (reprint from *Internationale klinische Rundschau*, Nos. 26, 27 and 29, 1889) describes an ingenious method of excising suspicious parametric bands and indurations after complete extirpation of the cancerous uterus.

From observations upon the manner of recurrence after galvano-caustic amputation of the cervix, he has noticed that it is apt to occur at the base of the broad ligaments and in the sacro-uterine folds. Hofmeier emphasizes the fact that hard parametric nodules accompanying cancer of the cervix may not change their form for years, but finally assume a malignant character. Ruge and Veit call attention to the frequency with which the broad ligaments are invaded, but believe that it is impossible to remove entirely the diseased parametric tissues because of the proximity of the ureters. Schroeder pointed out the importance of excising all the diseased tissue, but

feared injury to the ureters. "The indurations in the connective tissue," he said, "are beyond the reach of the knife."

Pawlik describes three cases in which he first located the ureters by catheterizing them, and then boldly excised all the indurated tissue, in one instance following along the base of the broad ligament as far as the lateral wall of the pelvis. The patients made a rapid recovery, although the writer frankly acknowledges that he does not expect a permanent cure, but that the method seemed to promise larger freedom from recurrence in advanced cases than usually followed simple curetting and cauterization. The hemorrhage which attends the radical operation is not severe, as the vessels can be ligated *en masse* before the tissues are divided. When the ureter can be plainly felt, as is the case when a catheter is inserted into it, the operator can boldly invade the broad and utero-sacral ligaments to an extent which was not before possible. Since it is impossible to decide whether a given parametric induration is simply inflammatory, or is malignant, all suspicious bands and nodules should be excised.

The Results of Castration for the Cure of Fibroma Uteri.

Wiedow (*Centralblatt für Gynäkologie*, February 15, 1890) reports sixty-six cases of oöphorectomy with five deaths (7.6 per cent.). Thirty-seven patients had been under observation for three or more years. In twenty-one the menopause was established at once; in fifteen after a few months. In twenty-four the tumor disappeared entirely; in eight it diminished perceptibly, and in one there was no change. Wiedow advises hysterectomy only in the case of pedunculated tumors, fibro-cysts, and tumors of unusual size.

Gonorrhœal Salpingitis.

Schmitt (*Archiv für Gynäkologie*, Bd. xxv. Heft 1), from observations in one hundred and sixteen cases, arrives at the following conclusions: In only twenty-seven cases was accompanying pelvic peritonitis noted. From the frequency of the latter complication in connection with non-specific salpingitis, it seems as if the number of women with gonorrhœa who have gonorrhœal affections of the tubes is relatively small. The extension of gonorrhœa along the entire genital tract takes place mostly within the first two months after infection. The accompanying peritonitis is due to the escape of pus through the ostium abdominale; this pus acts simply as a chemical irritant, and not by virtue of the contained gonococci. The fatal peritonitis which follows rupture of a pyosalpinx is the result of mixed infection.

Rupture of Pyosalpinx into the Vagina.

Veit (*Zeitschrift für Geb. u. Gyn.*, Bd. xvii., Heft 2) reports four cases in which he noted the following points of difference between pyosalpinx and ordinary pelvic abscess: Abscess of the tube is slower in its formation, and the general symptoms previous to rupture are less marked. The walls of the tube are thicker than those of an ordinary abscess-cavity, and do not collapse after the pus is evacuated; air enters the tube and its contents become more septic, and accompanying perimetritis increases. Spontaneous healing

is only obtained by prolonged drainage and the use of astringent applications to the sac. Extirpation of a pyosalpinx after rupture *per vaginam* is a dangerous procedure. Laparotomy should not be performed if the fistulous tract shows a disposition to heal.

Adherent Intestines Mistaken for Pyosalpinx.

Doléris (*Nouvelles Archives d'Obstét. et de Gynécologie*, 1889, No. 81) reports a case in which, by vaginal examination, he detected what seemed to be an undoubted pyosalpinx in Douglas's pouch. On opening the abdomen, the supposed tube proved to be an adherent coil of intestine. In two other instances the writer made a similar error, and does not see how it is possible to avoid it in some cases.

Tuberculous Peritonitis.

Lindfors, in a monograph on this subject (abstract in *Centralblatt für Gynäkologie*, February 15, 1890), analyzes one hundred and nine recorded cases, which he divides into seven classes. The acute variety may assume the form of circumscribed, general, or suppurative peritonitis; in the chronic there may be a free or an encysted effusion, there may be simple adhesions, or the intestines may be so adherent as to cause obstruction. Lindfors thinks that the presence of acute or chronic pleurisy has an important bearing on the diagnosis of tuberculous peritonitis. He is strongly in favor of laparotomy and the free use of iodoform within the cavity.

Is Iodoform an Antiseptic?

Tilanus and Kronacher discuss this question in the *Münchener med. Wochenschrift*. The former found that the *micrococcus putridus* flourished in culture-fluids containing a large amount of iodoform, and that the activity of the *staphylococcus pyogenes aureus* was unimpaired by the presence of the drug. He warns surgeons against depending upon iodoform to the exclusion of other antiseptics of known power. It may act well in wounds by setting free iodine. Kronacher studied the action of the drug when added to cultures of the bacilli of erysipelas, charbon and glanders, and decides that it may, when used locally, prevent disintegration of tissue, but that it is *not* an antiseptic since it does not kill germs.

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